

MANUFACTURERS RECORD

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STACKS


ARTICLE X.

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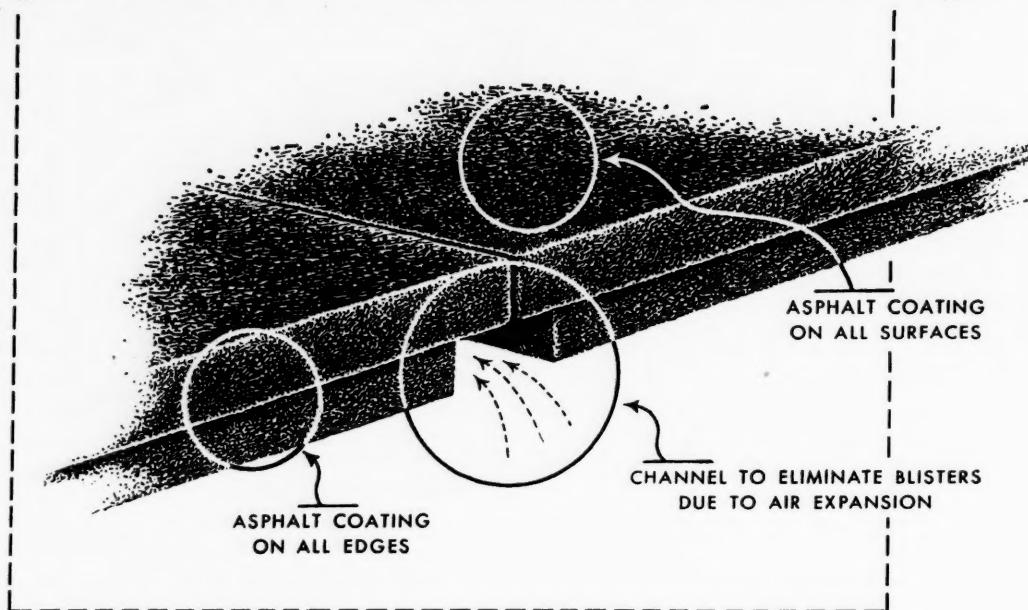
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MANUFACTURERS RECORD

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MAY, 1943

Volume 112, Number 5

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Southern Editors Speak

Thanks to our educational system most people read. They read certain national or business magazines that interest them and they read their local papers. These local papers express, through their editors' eyes and minds, the opinions of the localities they serve.

Because each paper, in each locality expresses its own opinions, and we presume its opinions are those of a goodly portion of its readers, we are publishing excerpts from a number of Southern papers so that citizens throughout the South may know what other people in other states are thinking, saying and doing.

What now is needed—for the first time in world history—and what is never mentioned by President Roosevelt or by any other political leader associated with him, or of his political belief, is a fifth freedom. That freedom is:

FREEDOM TO WORK.

—Shreveport [La.] Times

Dairymen in North Carolina sold their herds to the butcher and sought other means of livelihood. (It is just announced that 56 herds have been disposed of in North Carolina, which is not a dairy state. Losses in dairy states have been much heavier.)

The destruction of dairy herds had its origin in the fearful stupidity of the bureaucratic agency that formerly operated in Detroit and exercised control over the rationing of gasoline to farmers. This agency habitually reduced the allotment of gasoline to farmers, making cuts so drastic that it was impossible for dairymen and others to get their products to town, while a large amount of farm machinery was frozen for lack of fuel. This started the selling of dairy herds to the butcher and though the bungling method of handling this problem was changed the change came too late to prevent great damage.

But bungling in the allotment of gasoline has not been the only factor. In the case of the 56 herds in North Carolina, the specific cause of disposal was the freezing of milk prices by the OPA at a time when costs of production were rising sharply. Feed and labor were going up, the return to the dairyman was static. Unable to operate at a loss, dairymen took the only way open to them, which was to dispose of their herds and try to make a living in some other way.

—Waycross [Ga.] Journal Herald

There's real danger in the "let-the-Government-do-it" school of thought. That's the way the Nazis and the Fascists got their start—and look at them today. The doctrine which holds that the Government must give orders to the people negates the fundamental theory of democracy. The people should give the orders and the Government should carry them out—not the other way around. Let's forget all this "pie-in-the-sky" stuff. If we don't, we are surely going to have cause to regret it later on, and then it may be too late.

—The Roanoke [Va.] Times

MANUFACTURERS RECORD FOR

What has the whole federal government become under Mr. Roosevelt except a gigantic maze of extremely complicated and enormously bulky administrative machinery? Nor is this machinery straight-lined and functionally co-ordinated like that of a great industrial plant. One federal activity often duplicates another activity or is carried on in the same field, if one is not at cross-purposes with another. It is estimated that 3,500,000 federal employees will by the end of this coming June be operating this administrative machinery.

Not only has the federal government itself set up gigantic machinery, but it has compelled business concerns and industries to set up machinery to comply with federal regulations. A four-foot questionnaire was exhibited at a hearing of Senator Byrd's committee on reducing non-essential expenditures. Literally millions of copies of forms and questionnaires, prepared by government agencies at cost of time and money, have been sent out to bedevil manufacturers and merchants and farmers and the public generally. Along with them have gone other floods of rules and regulations and revised and re-revised rules and regulations.

—Arkansas Gazette

Whatever the cause of a shutdown in the mines, it is nothing more nor less than betrayal of the nation's cause in wartime. The guilty ones are directly fighting against the United States and for the Axis. Even if the government has to take over operation of the mines, there should be no hesitancy.

Traitors must be dealt with promptly. If the mines close, it will be because some men put personal interest ahead of patriotism. And that is nothing but the act of a traitor.

—Atlanta [Ga.] Constitution

All these simply show that the South is treated like a stepchild by the New Deal and there is a ferment of rebellion. The Republicans have not been any kinder to the South than have the New Dealers, so Governor Jones' suggestion is that we set up an independent Democratic party. In Louisiana one thousand voters, by signing a petition, can have their party candidate listed for an election and if that party polls 5 per cent of the voters it will be established as a local party in Louisiana and the same is true in other states.

The South has 115 electoral votes. Governor Jones says that whenever we organize and go to the electoral college with 115 votes we will check-mate the New Deal and the South will henceforth be recognized as it deserves.

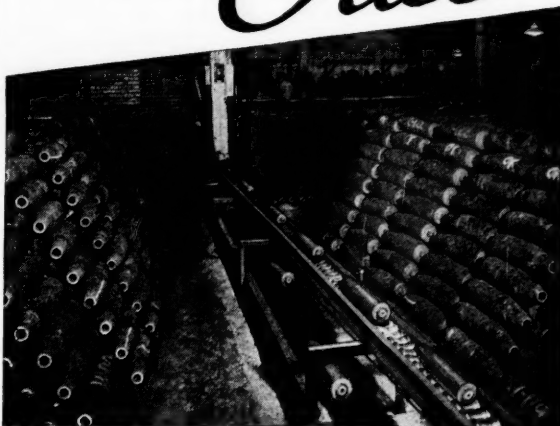
These are but the high lights of an article which already is attracting wide attention. The jolt to the New Deal lies in the fact that it is sponsored, not by reactionaries, but by true liberals, who are 100 per cent behind the president's war effort, but are tired of being discriminated against and foolishly regimented by the New Deal.

—Macon [Ga.] Telegraph

Let it not be overlooked that during his unexampled tenure in office Mr. Roosevelt has had the opportunity to appoint a heavy majority of the justices of the Supreme Court, and has literally reconstituted the federal judiciary in general. Those who have been chosen for these powerful and responsible posts have been selected on political grounds. They have been picked because they hold a political philosophy identical with, or conforming closely to that held by Mr. Roosevelt. This is self-evident from the simple fact that Mr. Roosevelt made a desperate effort to pass through Congress a measure giving him the right to add six members to the Supreme Court as a means of securing from that reconstituted body decisions which would validate the social and

(Continued on page 8)

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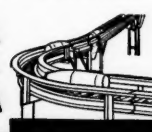
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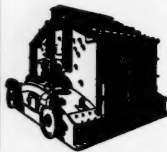


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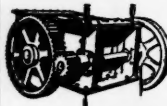
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economic legislation which he was prepared to drive through Congress. His hand was displayed then in a manner which could leave no doubt in any mind as to his intentions.

At the same time, Mr. Roosevelt continued to extend his influence over Congress, ignoring the Constitution's checks and balances, seeking to aggrandize executive power at the expense of the legislative branch, wishing to control not only the making of the laws but their judicial interpretation.

All this has been done in three terms. What would happen if he were able to perpetuate himself in office through a fourth term? Would not his lust of power increase? Would not his hold upon the forces which he has put in leash become stronger? Would not pressure groups, bought with favors, become the dominant elements in the United States? A regime might well grow into a dynasty.

—The Lexington [Ky.] Leader

It is true there always is business mortality in the best times as well as the bad. Venture capital takes chances, sometimes longer than others; but it is only natural that with human nature varying as it does, the degree of experience, training and judgment of men being as diverse as it is, failure of a certain percentage of those who go into business is inevitable. But the tragic and alarming thing about the number of businesses now quitting is that they are NOT failures, financially or otherwise; they are successful firms FORCED out of business by the policies, rulings, directives, questionnaires and designed and intentional annoyances of a bureaucracy gone completely mad with power and plans for a new regimented economy.

If any small business man still is fooled into thinking the administration is his friend, or is trying to do anything to help him remain a part of the normal economy of the nation he has another think coming. For the business of regimentation is just getting fairly started; and the Hopkins and the Browns and Wickards are just getting into their stride in annoying, harassing and otherwise forcing business men to quit, not in failure, but in sheer disgust and inability to cope with government red tape while trying also to run their businesses.

—Enid [Okla.] Daily Eagle

The trouble with the United States is that too many groups are trying to increase their incomes in this time of national peril. They have sought to turn the war into a grab-fest. It is the best way to insure this country's defeat.

—Richmond [Va.] Times Dispatch

The necessity for bringing federal bureaus under control of Congress becomes more obvious every day. Even the greenest members of Congress can see it. Congressional veterans are growing more and more uneasy as they see constitutional government giving way to government by executive order, which means chiefly, government by bureaucratic heads and their subordinates.

A law officer of the administration has ruled that when the president issues an order that is not supported by law it must be considered a law unless Congress abrogates it. When Congress is subservient to the executive branch of the government, as the former Congress was a good deal of the time, constitutional government is in effect suspended.

The rules issued by heads of government departments and bureaus for the regimentation of the American people in wartime have the force of laws. Washington officials promulgate a set of rules that are in effect laws, and numerous subordinates of these officials serving in regional and local offices scattered throughout the country interpret the rules, some-

times to suit themselves. These local interpretations also have the force of law, and woe to the citizen who dares to disobey them!

A good example of the confusion into which a sprawling, top-heavy bureaucracy has plunged the American government is given in the report of the Byrd committee that 48 government agencies sent out 7025 separate questionnaires. The Office of Price Administration alone sent out 7,715,229 forms, exclusive of rationing forms and instructions, although newspapers and magazines are forced to cut down their consumption of paper, because of a "paper shortage." There are 150 federal planning agencies and 100 are making post-war plans.

—Beaumont [Tex.] Enterprise

Senator Walter F. George of Georgia, who survived in spite of an attempted purge a few years ago and whose survival now may be interpreted as some kind of providential intercession promptly met the New Deal sally with a proposal that a nine-member postwar planning committee be formed to undertake solution of problems that must come in the wake of the world conflict. It was this southern senator's conviction that the aim of this committee ought to be to hold federal participation in postwar rehabilitation to a minimum and "to encourage individual initiative."

That suggestion is more in keeping with democracy. It holds out the hope that a Congress, regenerated and possessed of an awareness of its responsibilities in government, will function in defense of that spirit of America which made this nation great in the world. Aid for the halt, the lame and the blind, yes; a helping hand to those who falter, of course; a benevolent attitude on the part of organized society toward all the unfortunate units in it by all means. But regimentation for the able men and women that would result in atrophy of their talents, their skills, their enthusiasm and their ambition, no. The American people are not yet in a position to be led or driven into any such economic misconception.

Even Thurman Arnold, new dealer deluxe, has a different idea from his cohorts. Said Arnold:

"We have been thinking of stabilizing profits, of keeping a fool from losing his money, of social security, ironing out depressions, crediting a situation where anyone who remained sober and didn't run off with somebody else's wife was assured of a comfortable old age.

"I am not opposed to any of these methods of social security or humanitarian measures. I only say that if your whole thinking is obsessed with the idea of security, the same thing will happen to your industrial structure that happened to the French army that was obsessed with the idea of the Maginot line.

"We must get back to the old economics of opportunity, of taking a chance which made America great, and I think this war is going to do it for us."

So there is confusion and difference of opinion.

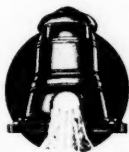
—Bluefield [W. Va.] Daily Telegraph

The time has come. Mr. Lewis expects to get the loyalty of his men by bribery. He dangles that "wholesome increase in wages" before them. If he could get what he extravagantly proposes, it would not be wholesome even for the miners. For Mr. Lewis is out to crack the whole wage stabilization program. And again he is using the emergency to attempt to enforce a demand which he could never enforce in ordinary times. He wants the foremen, clerks and whole supervisory personnel of the mines below superintendents brought into his union. He is thinking, of course, of the several hundred thousand dollars annually in dues that would flow into his treasury from 60,000 new members.

—The Courier [Louisville, Ky.] Journal



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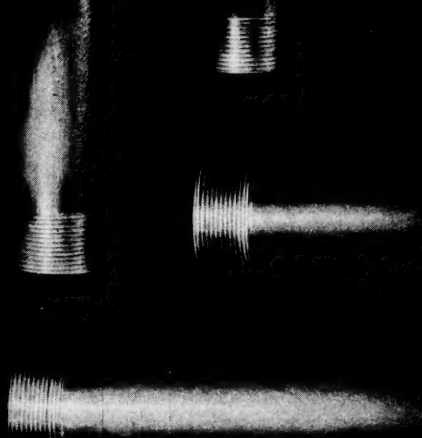


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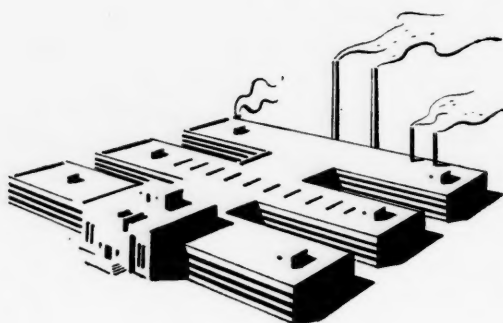
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A BUILDER HAS A BIRTHDAY



THE H. K. FERGUSON COMPANY observes its twenty-fifth anniversary this war year . . . Our job is—as it has been—to design—build—equip large factories—research facilities—power plants—quickly, at low cost.

As in peace times we are small enough to have a major executive in close touch with each project—to adapt our accounting methods to meet our customer's wishes—to keep our overhead low—to get quick action without internal red tape—to keep costs down.

We are large enough to be among the best—to allocate to design, construction and

equipment work on each project, men of proven talent and ability, regularly on our payrolls—to make our important customers proud of their association with us—to pay high taxes regularly—cheerfully.

As in peace times, we are consistently breaking records for fine quality—quick completion—low cost. If you have present or post-war problems in plant design, construction or equipment work including research facilities or power plants, our experienced preliminary suggestions should be useful to you without cost or obligation.

**The H.K.
Ferguson
Co.**

**ENGINEERS AND BUILDERS
CLEVELAND NEW YORK**



GIVE 'EM THE STUFF. . . That's OUR Job!

Two jobs must be done to win this war. One is to fight. The other is to make and deliver the weapons with which to fight.

Our fighting men and our fighting Allies have hit the enemy hard, damaging blows. But brutal, ruthless hordes still hold the powerful armed fortress of Europe, vast areas of Russia and China, and a rich, strategic empire of the Pacific.

We have just started to fight . . . just begun to win. How much longer will this war last? How many more thousands of fighting Americans and their Allied comrades must die?

To these grim questions there is but one answer. And that is: the speed and quantity of production of the weapons of war here in America, and their transportation to the front.

The United Nations on every battlefield of the world must have more — more of everything to replace, to increase, and to maintain an unbeatable superiority over the enemy.

In America, we have the resources, the skill and the manpower to produce more — and still more. We must give 'em the stuff — That is our job! Nothing must be allowed to interfere with doing that job.

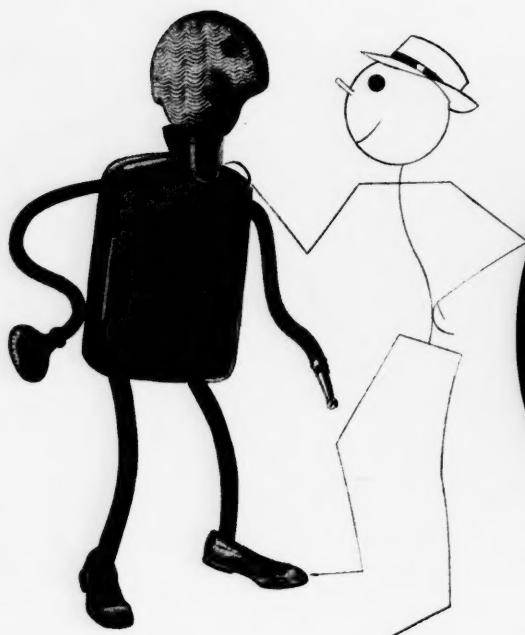
NORFOLK and WESTERN



Railway

P R E C I S I O N T R A N S P O R T A T I O N
BUY MORE WAR BONDS

MAY NINETEEN FORTY-THREE



WE HAVE
THIS TO SAY ABOUT
RUBBER

We are *not* thinking about whether you have an A card or a C card.

We *are* thinking about whether you are an Imagineer.

If you are that kind of man, you are already pondering how you are going to create your share of the millions of jobs that are going to be needed after the war.

You are remembering that the supply of all kinds of rubber is going to hit astronomic figures after the war.

You are observing that new chapters in rubber technology are being written every day by the very war necessities which preclude civilian uses.

And you shrewdly sense that the whole economics of rubber is undergoing great change.

So you are planning to take advantage of this new set of conditions in that new postwar product of yours.

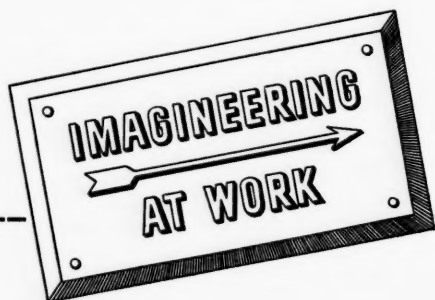
Of course you are. That's Imagineering.

Now please insert the word *aluminum* every place you read *rubber* in the foregoing. And then permit us to ask whether you are also planning to take advantage of Alcoa Aluminum supply, and technology, and economics, in that new postwar product of yours, that product you are going to make postwar jobs with.

We make bold to keep talking about postwar, exactly because we, in company with all industry, are producing at top speed in order to make war a thing of the past. It is our job. We know no other.

But we are Imagineering for the future in our eighth day of thinking time. We mean to make Alcoa Aluminum make jobs.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



Alcoa Aluminum



When it's not raining rain ... but **FIRE!**



IN England most of the modern concrete and steel buildings protected with coal-tar pitch, felt and gravel roofs have been proved practically invulnerable to incendiaries. Even on buildings whose roofs were of wood base covered with coal-tar pitch and felt topped with an inch of gravel or slag, many incendiaries burned themselves out without penetrating into the interior.

Whether or not America is ever subjected to bombing raids, the experience of England has special significance to owners of wartime plants in this country. For any roof that will withstand

3000° temperature of thermite incendiaries is obviously pretty good protection against ordinary flying sparks and embers that might set off disastrous conflagrations.

Gravel or slag surfacing, an integral part of a Barrett Specification Roof, not only permits the use of greater quantities of coal-tar pitch waterproofing and protects the roof against active rays and mechanical damage, but it is

also one important reason why Barrett Specification Roofs carry Fire Underwriters "Class A" rating.

In these days when uninterrupted production schedules are so vitally important, you can't afford to gamble on roofs. Give your buildings Barrett Specification protection—against rain, and sun ... and fire! Consult with us or your local Barrett Approved Roofer on any roofing or waterproofing problem.

THE BARRETT DIVISION

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Barrett Built-up Roofs ... Shingles and Sidings ... Roll Roofings
...Rock Wool Insulation ... Roof Coatings and Protective Products

*Trade-mark Reg. U. S. Pat. Off.

LAST YEAR'S BONDS GOT US STARTED

THIS YEAR'S BONDS

ARE TO WIN!

★ Last year saw nearly 30,000,000 workers voluntarily buying War Bonds through some 175,000 Pay-Roll Savings Plans. And buying these War Bonds at an average rate of practically 100% of their gross pay!

This year we've got to top *all* these figures—and top them handsomely! For the swiftly accelerated purchase of War Bonds is one of the greatest services we can render to our country . . . and to our own sons . . . and our neighbors' sons. Through the mounting purchase of War Bonds we forge a more potent weapon of victory, and build stronger bulwarks for the preservation of the American way of life.

"But there's a Pay-Roll Savings

Plan already running in my plant."

Sure, there is—but how long is it since you've done anything about it? These plans won't run without winding, any more than your watch! Check up on it today. If it doesn't show substantially more than 100% of your plant's pay-roll going into War Bonds, it needs winding!

And you're the man to wind it! Organize a vigorous drive. In just 6 days, a large airplane manufacturer increased his plant's showing from 35% of employees and 2½% of pay-roll, to 98% of employees and 12% of pay-roll. A large West Coast shipyard keeps participation jacked up to 14% of pay-roll! You can do as well, or better.

By so doing, you help your na-

tion, you help your workers, and you also help yourself. In plant after plant, the successful working out of a Pay-Roll Savings Plan has given labor and management a common interest and a common goal. Company spirit soars. Minor misunderstandings and disputes head downward, and production swings up.

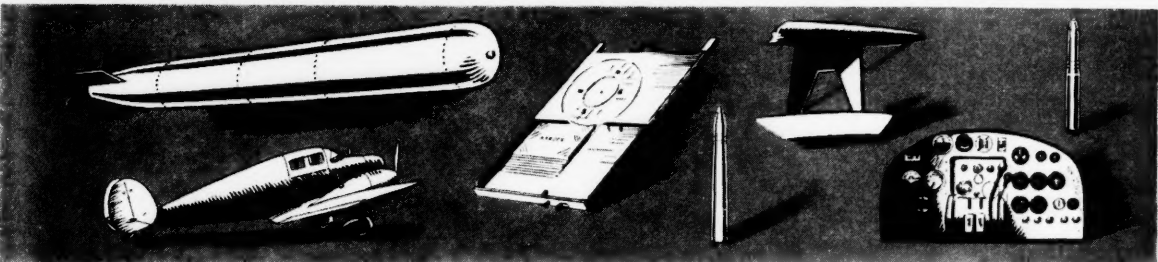
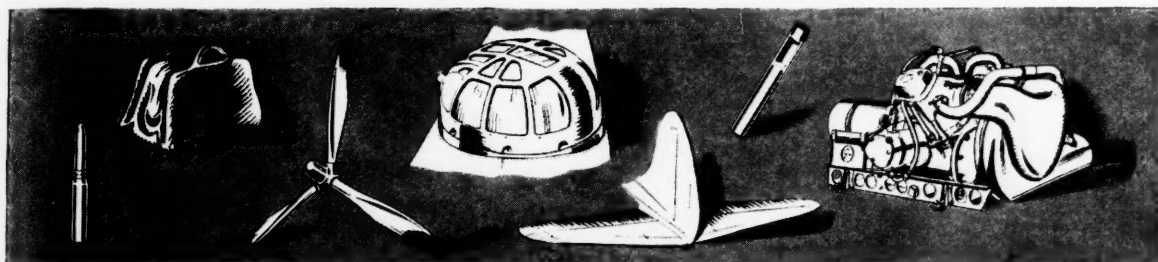
War Bonds will help us win the war, and help close the inflationary gap. And they won't stop working when victory comes! On the contrary—they will furnish a reservoir of purchasing power to help American business re-establish itself in the markets of peace. *Remember, the bond charts of today are the sales curves of tomorrow!*

You've done your bit  Now do your best!

THIS SPACE IS A CONTRIBUTION TO AMERICA'S ALL-OUT WAR EFFORT BY
MANUFACTURERS RECORD

Teamwork Speeds Production

Months ago, we teamed up with
a 23-state network of 1189 sub-contractors.
The result: mass production . . . months sooner.



● These are not all the war products of Remington Rand and affiliated companies; there are others which we can not picture. But the ones we can show point out a significant fact: the same abilities required to make our extremely diversified lines of office equipment are being devoted today to the production of a wide variety of war materials. And the capacity of our production lines is tremendously increased by the loyal, enthusiastic co-operation of hundreds of sub-contractors scattered throughout the land. This is the picture of America today . . . factories and people everywhere teaming up to bring our men home sooner.

YOU'RE ON THE TEAM, TOO PUT 10% OF EVERY DOLLAR INTO WAR BONDS!



Remington Rand

ON THE HOME FRONT we fight the war, too...by helping other war plants increase their production...by furnishing control systems and filing equipment to help *all* businessmen combat shortages of personnel and mountains of paper-work . . . by supplying the technical advice of experienced specialists skilled in all phases of accounting and record control. If increased office efficiency can help *your* business, we urge you to call our nearest office today.



Would you turn your back on a wounded Soldier ?

You think you wouldn't...you don't mean to...

But unless you are giving every precious minute of your time...every ounce of strength that you can spare...towards helping win this war as a civilian, you are letting down those soldiers who are sacrificing lives to win it for you.

What you are asked to give up isn't much compared with what they're giving up. The extra work you undertake is small compared with the gigantic effort they are making. But to a wounded soldier, what you do can mean the difference between life and death.

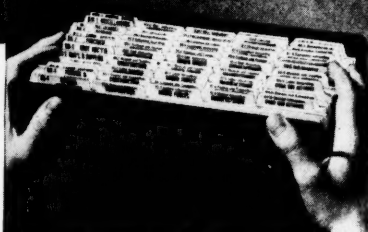
You make the choice.

LOOK AROUND YOU! Pick your war activity—and get into it! In your local Citizens Service Corps or Defense Council there is something for every man, woman and child to do. If no such groups exist in your community, help to organize them. Write to this magazine for free booklet, "You and the War," telling what you can do to help defeat the Axis. Find your job—and give it all you've got!

Contributed by the Magazine Publishers of America

EVERY CIVILIAN A FIGHTER

MANUFACTURERS RECORD FOR



Owing to the character of the information contained in this war accounting portfolio, it is not for general distribution. It is available for review, through local Burroughs offices, to industrial and government officials directly concerned with war accounting.

WORKING TOGETHER TO SAVE TIME AND CONSERVE MANPOWER

In war industries, camps, depots, bases and government offices, Burroughs systems and installation men have been working with officers and executives responsible for setting up practices that save accounting time and conserve clerical manpower.

Because of their wide experience with industrial accounting and government accounting, Burroughs men know how to correlate both, and how to apply to them the speed and efficiency of figuring and accounting machines.

In the course of this work, detailed information has been compiled—information that describes and illustrates practically every war accounting procedure. It is available for review by responsible officials who need to handle vital accounting with the greatest possible savings in time and manpower.

BURROUGHS ADDING MACHINE COMPANY • DETROIT, MICH.



MANUFACTURING FOR WAR

The manufacture of aircraft equipment for the Army Air Forces, and the manufacture of Burroughs figuring and accounting equipment for the Army, Navy, U. S. Government and the nation's many war activities, are the vital tasks assigned to Burroughs in the Victory Program.

Burroughs

Figuring, Accounting and Statistical Machines • Nationwide Maintenance Service
Carbon Paper, Roll Paper, Ribbons and Other Office Machine Supplies

Now, you can

**YOU'VE GOT TO
SPEND MONEY
TO MAKE MONEY**

**BUY MORE
WAR BONDS**

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OFFICES IN PRINCIPAL CITIES



LABOR DICTATORSHIP

Labor Unions have paraded across the American political and economic stage for many years representing themselves to be democratic organizations. How many of them are organizations and how many of them are democratic? Most of them are the creatures of their creators. Their members are told what they must do, not what they can do. Meetings are occasionally held so that the crackpots among the membership who always attend meetings, may do just the same kind of thing people did for Schicklegruber in Germany over ten years ago—set the scenery and raise the curtain for dictatorship.

Compare some of the unions with political and social conditions in Germany. The attitude of the leaders of such unions toward the Nation is exactly the same as that of Germany toward the world. They represent a chosen people above and outside the law. Their policy is dictated by the undemocratic thought that the end justifies the means. Social consciousness and moral decency toward their fellow men is completely ignored. Their interests are self-centered.

When one thinks of the United Mine Workers he doesn't think of them as an organization. He thinks of John L. Lewis. When one thinks of the Musicians union he doesn't think of them as such, he thinks of Petrillo. When one thinks of the Teamsters union he thinks of Toban.

Draw the comparison. When one thinks of Germany one thinks of Hitler.

The attempt to prove to the American public that labor unions are democratic is insulting to our national intelligence. When men are made to pay for the right to work, when they are told what work they may or may not do it is time to draw a comparison between that system and the one prevailing in Germany.

Labor leaders in many of the unions are elected by voice. The delegates to the so-called convention, no

matter what their intentions may be, do not know whether the men sitting next to them have black-jacks or just hard fists. Where is there any difference in this procedure of shouting "yes" good and loud at the right time and the German reichstag shouting "Ja, heil Hitler"?

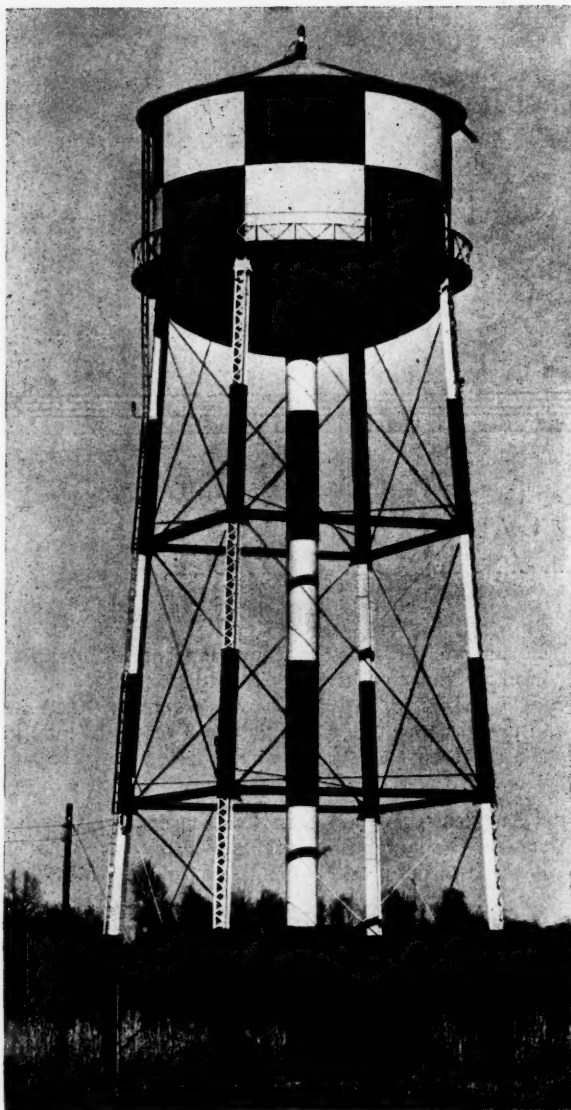
Any democratic organization to be democratic must control the power to spend its own money. Yet who is there to deny that John L. Lewis (instead of the United Mine Workers) got the credit for contributing \$500,000.00 or more to the Democratic campaign of 1936? Who put up the money? It came from the pay of real workers.

Compare that with the present plight of the French, Dutch, Norwegians, not to mention the Poles who work for Hitler. They, too, pay with their labor and Hitler reaps the harvest—and thanks to free people it will soon be the whirlwind.

Labor leaders must always be aggressive. They must always promise their members, or their prospective members, something that members supposedly can not get for themselves. They must constantly attack even if they create an imaginary foe. Compare that with Hitler.

Who runs the local or regional branches of the unions? Is it the locally elected representative? In most cases it is the "organizer" (he may be called by another name) appointed by the self-perpetuating head and directly under his orders. It rather seems that this smacks of the Gestapo. It certainly can not be called democratic.

Just what is the union? It is a collection of otherwise individual free men gathered together in a flock and driven by its leaders to be sheared. The flock is kept together by compulsion and the shearing is conducted by the same method. Draw the comparison between that and the condition of the German people under Nazism.



The Horton elevated storage tank shown above provides dependable gravity water pressure for an automatic sprinkler system at a Southern manufacturing plant. It has a capacity of 100,000-gals. The flat-bottom storage tank shown at the right provides an additional water capacity of 200,000-gals. for general service and fire protection at this same location.

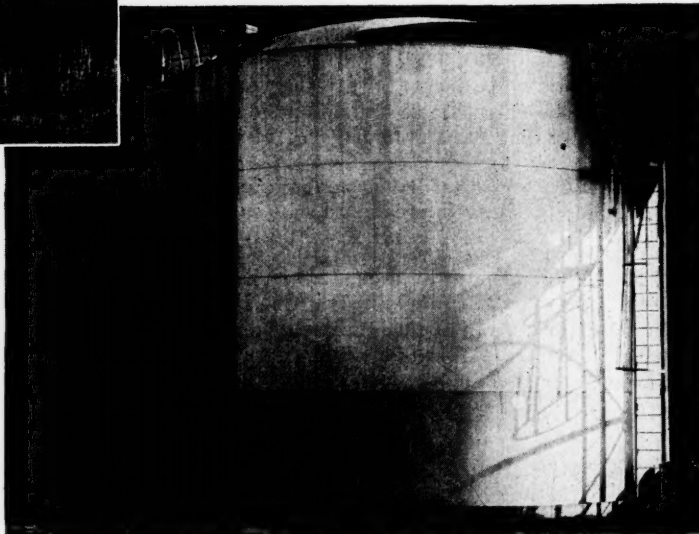
Two types of tanks for two types of Industrial Service

ELEVATED steel tanks are providing gravity water pressure for general service or fire protection at many types of chemical and industrial plants. Special elevated structures are also being used for the storage and handling of oils, acids and other liquids in manufacturing processes.

Flat bottom tanks or reservoirs of standard capacity or suction tanks of special design often provide a secondary water reserve for fire pumps, or storage facilities for other liquids. Tanks of this type are to be found in almost any plant.

Industries, with an eye on post-war expansion programs, can benefit by studying the role that elevated tanks and other types of storage tanks are playing in helping to maintain today's uninterrupted production schedules.

Protect existing storage at your plant against deterioration by systematic inspection and maintenance.



CHICAGO BRIDGE & IRON COMPANY

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Saboteurs

Whether we agree with the policies, words or acts of the President of the United States, he still remains President and Commander in Chief of our nation at war.

It is our right as citizens to commend him or criticize him. It is our plain duty to obey him so that our great national strength is made overwhelming as a great national unit.

There is an old army saying that the best soldier is the one who, when off duty, "gripes" the most. When the going is tough he fights the hardest. This is also true of those of the civilian population who are criticizing now. They, for the most part, are working long hours without complaint or doing two or three jobs where they used to do one. They are entitled to their "gripe" because in the regular American way they are doing their best.

But how about the few, the selfish few, who seize a national crisis to enhance their own importance and power at the expense of all the rest of us, jeopardize our very national existence and flout the power invested in our Commander-in-Chief. Such men are traitors just as surely as is the soldier who, for personal reasons, goes over to the enemy during the course of battle. They should be dealt with as such.

Ask yourself this question: Who is the most effective saboteur in America today?

There is but one answer.

Abolish or Deplete

The next best thing to abolishing useless and overlapping agencies and bureaus in Washington is to reduce the personnel that they employ and that we, the American people, pay.

There is every reason to believe that thousands upon thousands of these federal employees have been excluded from the army draft on the recommendation of their superiors. They have been recommended for exemption on the ground of their indispensability.

Many business men have had occasion to meet a number of government employees. Ask any one of these men how indispensable he thinks they are? Ask if he would be willing to employ the average as a member of his business organization?

While this condition continues to exist we hear frantic yowls about a labor shortage and a farm production shortage and a clamor to draft family men into the services.

It is reported that the office of Price Administration has 2700 school graduates who presumably hold law degrees. These, the office undoubtedly thinks are indispensable. Is it because of the knowledge of planning that they have gained through experience?

The 22,000 clerks in the War Production Board ought to be able to keep each other in a pretty fair

state of confusion under the lack of direction that is apparent to any intelligent man who comes in contact with this bureau.

Then there are the young hopefuls who plan the reduction in the length of coffins, the abolition of cuffs on trousers, and other ideas of a similar character too numerous to mention who clutter the government buildings and the hotels and homes of Washington. There is plenty of room for most of them in army barracks.

Statistics recently compiled show that we have one civilian employee in the war agencies alone for every three men in the army. Contrast this with the record in Canada—one civilian employee to eight soldiers.

By all means let us dig deep into the pool of our manpower but let us dig intelligently and democratically and fairly.

By converting an incubus on the public payroll to a fighting man at the front a double objective is accomplished.

Where the Fault Rests

Let us face facts. Civilian governmental regimentation is not working.

There is a gasoline and fuel oil shortage in the East because of lack of transportation while the oil wells are producing.

There is a meat shortage and yet a bounty was paid for not raising meat producing animals.

There is a coal shortage because one man is withholding the production of one of the Nation's basic industries.

There is a labor shortage because union regulations sanctioned by government, require two, three, four and often more men to do the work that one man can do.

It is time to face facts.

The notions of immature intelligence in Washington have cost millions of dollars and many lives. It is time to discard crackpots and replace them with men who know and approve the principles that have proven their worth for more than a hundred and fifty years.

We have a way of life that has succeeded. It has created and fostered the progress and well being of our nation far beyond that of any other nation in the world. Are we willing to surrender it?

It is time to release the governmental brake that retards and impedes the economic vehicle of production and progress.

It is time to send the individuals who operate that brake back to their colleges or law practices—if any.

It is time to either regulate labor leaders under sensible laws or put them in jail if they fail to obey such laws.

It is time that we all recognize the fact that each one of us is an American, that each one owes a duty and a love to his country that transcends every political and selfish motive.

It is time for a real political purge.

The FUTURE of the COTTON TEXTILE INDUSTRY in the SOUTH

WHEN speaking of the cotton textile industry it must be borne in mind that 80 per cent of that industry is in the South. It is therefore primarily a southern industry. In cotton production almost 100% of total growth is in the South. At current prices southern farmers are receiving for their cotton lint an annual income of approximately \$1,100,000. From cotton seed at current prices there is an additional annual income in excess of \$250,000,000.

The cotton mills of the South are at present employing approximately 400,000 workers. The average wage is approximately \$23.00 a week. In terms of annual income for southern cotton mill workers this aggregates the stupendous sum of \$478,000,000. Thus the cotton farmers and cotton mill workers together receive directly from our cotton growing and processing in the South approximately two billion dollars a year.

For the last three years cotton textile mills throughout the entire United States have been operating at the highest rates ever recorded. Consumption of the white fiber by American mills alone is almost equivalent to the size of the domestic crop. Where surpluses of goods were once the rule, they are now the exception despite the fact that mills are turning out about a billion yards of cloth per month. The weight of cotton being processed by mills is about four times the poundage of all other textile fibers combined. Stocks in the hands of mills are negligible while those in retail hands are dwindling. Not only the United States but all parts of the world are clamoring for the cotton products made in the thousand and more mills that constitute the American cotton textile industry.

This about sums up the position of the industry as it is at the present time and as it is likely to be for as least two years after the war for that much time will be required to clothe the indigent na-

By

DR. CLAUDIUS T. MURCHISON,*

*President,
Cotton-Textile Institute*

tions and build up the almost non-existent supplies of cotton goods in all parts of the globe. Judged from almost any angle, except that of price, the situation in cotton goods is veritably an answer to the efforts and dreams of leaders in the industry who for years thought the millenium would be achieved if mills succeeded in consuming ten million bales of the fiber annually, thus freeing American farmers from their great dependence on export markets. In 1941 consumption amounted to 10,574,657 bales while in 1942 it reached the total of 11,436,312 bales. In March of this year mills consumed the astonishing total of 995,512 bales.

Under the circumstance, the question may well be asked, "Why shouldn't the industry rest on its laurels? It has demonstrated an enormous productive capacity, great technical proficiency and an ability to adapt itself to swiftly changing conditions that many of the industries born in the twentieth century may well envy. What has it to fear for the future? For the last 150 years it has been a mainstay of the American economy and should now be in a position to coast along on the momentum it has obviously gathered over so long a period."

The answer to all of the above is that the industry simply cannot afford to take even a momentary respite. If anything distinguishes this war from the last as far as the industry is concerned it is the attitude that millmen are taking toward the future. On all sides, there is discussion of what the future holds in the way of competition and what steps should be taken by the industry and the individuals within it to meet the intense competition that is bound to

develop in consumer goods markets once the post-war boom evaporates.

Cotton's almost incredible versatility makes it particularly vulnerable to competition. Cotton's competitors include not only the several textile fibers—silk, wool, linen, rayon and other synthetic fibers, jute, sisal, hemp, manila—but also all sorts of other materials, including paper, spun glass, leather, and rubber, and by such mechanical devices as electric hot air dryers to supplant towels, and metals used for awnings and roofings. Each one of these industries concentrates on one segment, sometimes a very small share of the great market served by cotton. The cotton industry does not present the ideally united front against such inroads, because, for example, a bedspread manufacturer is not concerned with competition from jute bags, sisal twine or paper curtains. Some of these competitive inroads represent in themselves only mere nibbles into the whole market for cotton, but in the aggregate they bite off a substantial amount.

Just to give you an idea of what cotton faces in the way of competition, it may be instructive to glance at what some of these competitors of cotton are doing. Take the paper industry as an example. An exhibit in Washington by the paper and pulp division of the W. P. B. includes some 300 articles—some military but mostly civilian—which are made of this humble, inexpensive and lightweight material. There are paper blankets, paper rugs, paper chair seats made of woven twine, grease proof paper aprons and even paper garbage cans.

Some of the more startling forms of paper shown in this exhibit are now reserved for military use. Processed paper raincoats, for example, are being turned out for wear by Commando troops and the paper aprons are now being made exclusively for use by war-indus-

try mechanics. Some of the articles are made of a plastic with a paper-pulp base—originally designed as a lightweight material for the construction of gliders. This sturdy new substance is being stringently restricted until after the war; then, it is expected, it will appear in many forms such as tableware, cups and saucers, knife handles and trays.

Up to two decades ago the American textile industry employed only the natural fibers, cotton for the most part, then wool, silk, linen, hemp and jute. In 1938, the last pre-war year, cotton consumption amounted to 81 per cent of the total poundage, rayon was 9 per cent, wool 8 per cent and silk only 1½ per cent of the total. The significance of rayon is greater than these figures indicate. It has entered the dress industry, is predominant in women's underwear, is being used extensively in hosiery and is now entering the field of mechanical fabrics once held almost exclusively by the cotton industry. Originally designed as a substitute for silk, its development in recent years, especially in the improvement of staple fiber, has led it into competition with cotton in many markets.

During the past few years approximately 650,000 bales of cotton have gone annually into the production of automobile tires. A few years ago high tenacity rayon suitable for tires did not even exist. Not until about two years ago was it even heard of outside of technical circles. Yet during the past few months the nation has witnessed what amounts to the virtual repudiation of cotton tire cord for Army purposes and the ordering of an enormous expansion of rayon production even at the cost of diverting eight or nine million pounds of strategic war materials in order to supply the Army with rayon tire cord. In this instance, cotton was put on the defensive and may have lost a major battle, not necessarily because it was inferior for a given purpose but because it did not have the verified facts of the type which were essential to winning its acceptance under the prevailing circumstances. Science working on this problem might have saved the American farmer and the Ameri-

can industry untold millions.

This, perhaps more than any other recent developments, emphasizes the need for continued research in all branches of the cotton textile industry. The current interest in research by the industry is in itself a manifestation of the belief of millmen that only through science and the scientific approach to problems of production and marketing can the industry hope to hold its own. While it is undeniable that cotton mills can convert their equipment to synthetic fibers, many are reluctant to do so, not only for sentimental reasons but also because being located in the cotton produc-



Dr. Claudius T. Murchison

ing states they are well aware of the importance of cotton in the national economy and what any decline in its usage or importance would mean in terms of economic stability in all parts of the nation. Cotton is grown in seventeen states all of which could easily turn to wheat, corn, and other farm products which are now grown for the most part in states that are not suited for cotton cultivation. Such a development, of course, would seriously upset the nation's agricultural economy and lead to a period of long and painful readjustment.

Research in cotton is years behind schedule but this should not give rise to a feeling of defeatism. Cotton, to begin with, possesses certain characteristics which account for its predominance in textiles the world over. It occurs naturally in a fiber form whereas

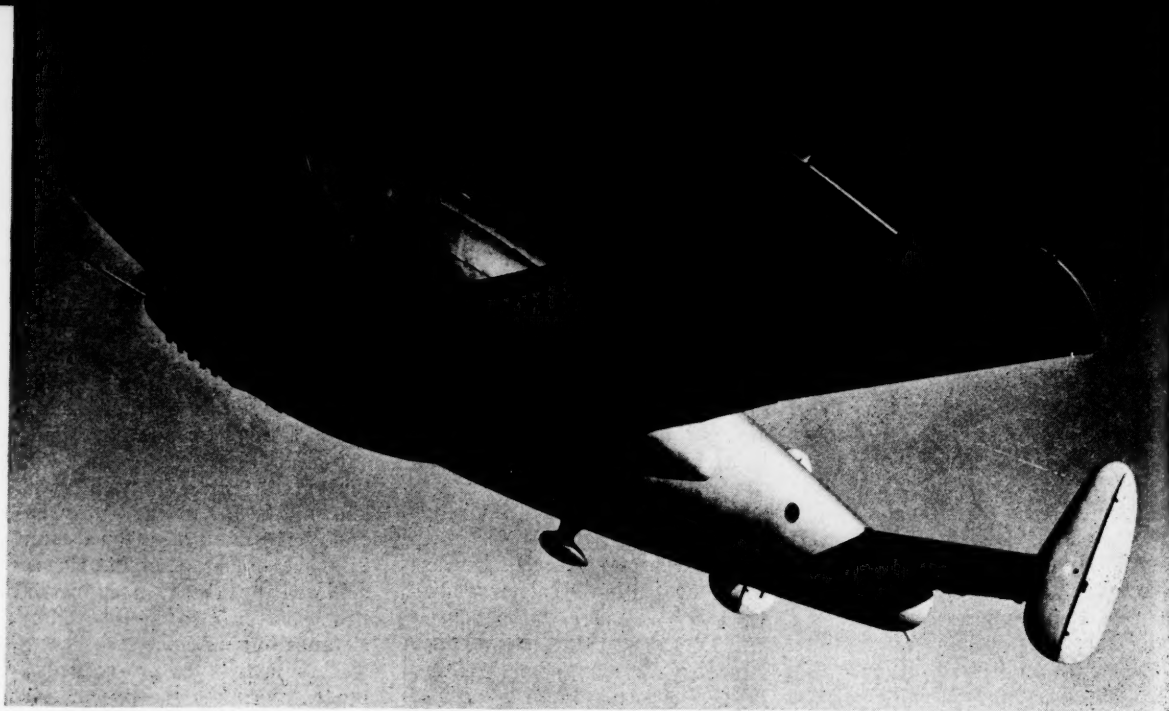
synthetic materials must be made into fibers. It is a rather pure form of cellulose while the cellulose in wood, which is the largest source used in rayon manufacture, occurs also with lignin, a troublesome substance. Cotton's purity affords great stability—it is relatively insensitive to ordinary degradative influence. It is independent of temperature effects, being flexible at low temperatures and remaining so at high temperatures without becoming plastic or fluid. Cotton's great tensile strength is well known. The wet strength of yarns and fabrics made of cotton account in part for the great success achieved by these in industrial uses. Cotton also offers good resistance to abrasion.

These attributes not only demonstrate what a really superior product cotton is but constitute a real basis for research work. It has long been my contention that cotton is in the first stages of scientific study and experimentation and that research devoted to it promises richer rewards than research on any other single organic substance.

Research, to do the job that should be done for cotton, must begin on the farm with the breeding, the cultivation and the preparation for ginning. It is needed in the analysis and in the chemical and physical treatment of the raw fiber. It is needed in the blending of selected fibers to assure predetermined yarn qualities. It is needed in the refinement of machinery and in the mechanical aspects of all degrees of processing. It is needed both in the materials and in the methods of finishing for the dual purpose of utility and fashion variety.

The industry has already gone a long distance toward establishing a program aimed at these objectives. On all sides and in all divisions of the trade the future prosperity of the industry lies in following a well-defined program of research. Nurtured by science, cotton can be transformed and revolutionized beyond the anticipations of even the most optimistic in the industry. The industry then will not have to worry about what to do with two or three million bales of surplus cotton or the in-

(Continued on page 66)



PLASTIC PLYWOOD AIRPLANES

By

SHERMAN M. FAIRCHILD

Chairman of the Board

Fairchild Engine and Airplane Corporation

ABOUT six years ago, long before the war, there were launched investigations of possible substitutes for aluminum which: (1) could be molded and fastened together with adhesive, thereby eliminating the then high cost of joining aluminum by riveting, and (2) would have about the same strength/weight ratio as aluminum and yet have a low enough density to provide sufficient local stiffness to insure structures which would have a perfect contour and a smooth surface. This surface smoothness requirement is not met by even flush-riveted aluminum structures, yet maximum smoothness is necessary in order to achieve highest performance. For example, a Spitfire is said to lose 23 mph just because of the increase in the roughness of the wing surface with use.

Above—The Fairchild AT-14, a bomber-crew training plane in the construction of which the only metal used is in the engines, engine supports, instruments and certain other supports. The balance of the plane is built of plastic bonded plywood formed into rigid shapes and structures. At top left a bonded structure is being placed in an autoclave used to provide the heat and pressure treatment. Bottom left—A workman laying strips of veneer and sheets of glue in a die for one-half of the rear section of the fuselage shell for an AT-14 like that shown above.



Top—Fitting a fuselage shell on the frame of an AT-14 at Fairchild's Burlington, N. C., plant. Top center—A line of rear sections of fuselage shells that will be used in AT-13 or AT-21 advance trainers. Lower center—Stabilizer shells being removed from the die after molding. Bottom—A steel female mold used for shaping the wing of a twin engine trainer.

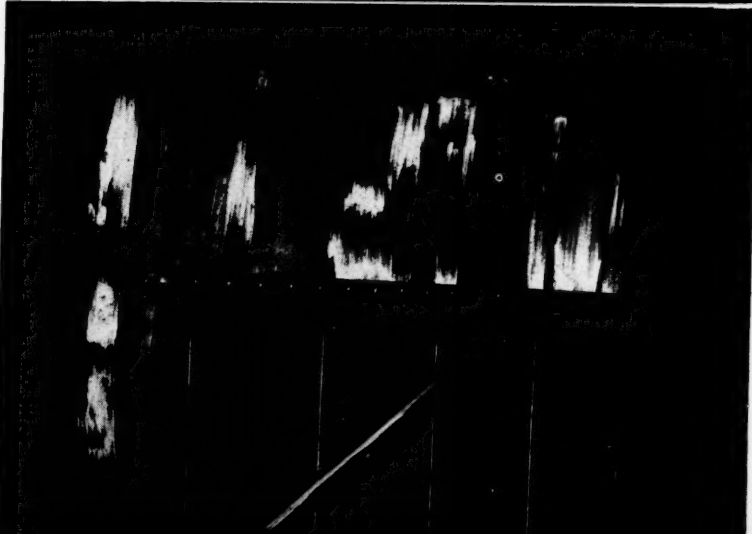
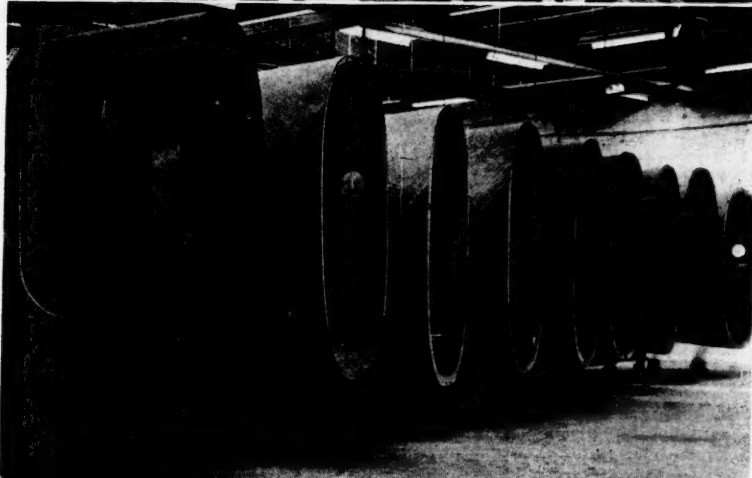
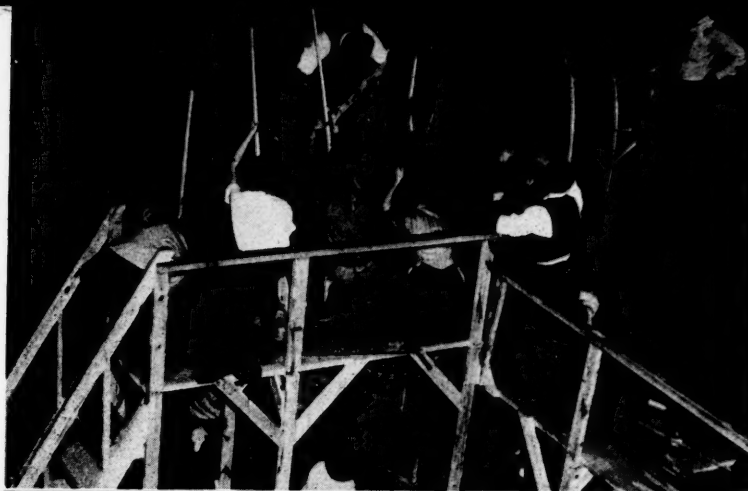
The result of the research and manufacturing experience gained in this field by Fairchild Engine and Airplane Corporation, just one of the investigators, is known as the Duramold process. Three types of military airplanes built by this process have been developed at the Aircraft Division factory at Hagerstown, Maryland. They are known as the AT-13, AT-14 and AT-21 airplanes. The first is powered by radial engines (Pratt & Whitney) and the latter two by inverted, inline aircooled engines (Rangers). The first two are designated by the Army as bomber crew trainers; the latter, with slight modifications, is a gunnery trainer.

In order to meet the Army needs for these AT aircraft, a plant consisting of new and revised buildings has been established at Burlington, North Carolina, to manufacture aircraft exclusively by the plastic bonded plywood process. Various elements will continue to be made at Hagerstown for assembly at Burlington and arrangements have been made for two other manufacturers — Bellanca Aircraft, of New Castle, Delaware, and McDonnell Aircraft, of St. Louis—to supplement the Burlington operations by also making complete assemblies of the AT-14 and AT-21 types.

All our investigations of the above-mentioned problem led to the use of fibers, preferably wood fibers in the form of veneers, bound together with and protected by plastics. It was evident even at the start that the material was non-strategic and for this reason might be of great value in time of national emergency.

The non-strategic value of structures of molded wood and plastic has over-shadowed the advantages resulting from the low density and has tended to have variations of improved wood considered more from the standpoint of wartime

(Continued on page 60)





A modern turpentine fire still.

By

S. PALKIN

*Chief, Naval Stores Research Division,
Bureau of Agricultural and Industrial
Chemistry, Agricultural Research Admin-
istration, U. S. Department of Agriculture*

TURPENTINE, its components and derivatives are contributing many vital products in the present emergency. These enter into a variety of industrial fields, including plastics, drugs, chemicals, synthetic resins, protective coatings of all kinds, and more recently in the rubber industry.

So much emphasis has been placed on the derivation of camphor from the pines of turpentine that there has been, perhaps, a tendency to overlook other important chemical developments in the use of turpentine, developments which play an important role in the present emergency and may have considerable influence on the post-war economics of the naval stores industry. For example, from β -pinene, a major component of gum and sulphate wood turpentines, valuable resins such as Piccolyte and Nypene are being produced. These have important military and industrial uses. Such compounds as isoprene and myrcene, which have only recently become commercially available, are assuming importance as synthetic rubber intermediates, particularly in conjunction (copolymerization) with other intermediates. These compounds, isoprene and myrcene (the latter derivable from β -pinene), and a compound similar to myrcene, viz., allo-ocimene (de-

rivable from α -pinene, the chief component of all commercial turpentines) also have potentialities in the resin and plastic fields.

Camphor serves important uses in this war as it did in the last. In this war it is truly an American product, but before the last war, when camphor was considered essential as a plasticizer in making smokeless powder, Germany supplied our industrial requirements of synthetic camphor, even though it was made from turpentine, of which the United States was then, as now, the world's largest producer. Complete stoppage of imports of synthetic camphor did not seriously affect us since, at that time, natural camphor was available from Japan, who was then our ally. Although camphor no longer retains its dominant position in the manufacture of munitions (as a plasticizer for smokeless powder), large quantities are today consumed for plasticizing cellulose derivatives in making photographic film, much of which is used for military purposes. Today both Germany and Japan are our enemies, but we have ample camphor, for long before Pearl Harbor the manufacture of synthetic camphor from turpentine had become a flourishing industry in this country.

Turpentine Derivatives in the Rubber Field

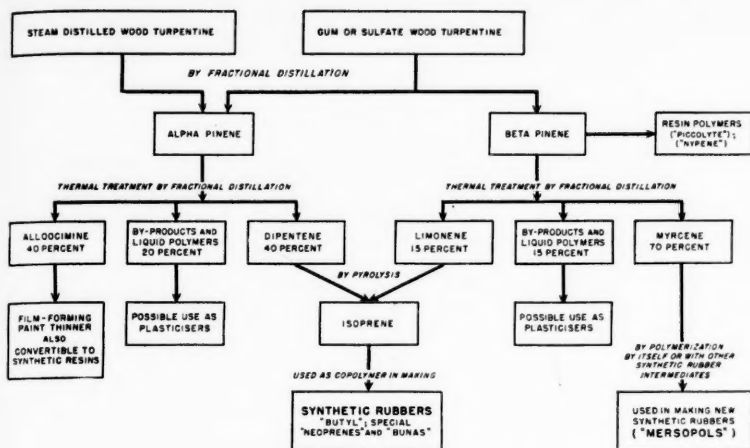
A close chemical relationship between natural rubber and the terpene compounds, some of which comprise turpentine, has long been recognized, and derivatives of tur-

pentine figured quite prominently in early experiments on synthetic rubber. However, it was only recently that turpentine derivatives for the manufacture of synthetic rubber became commercially available. Isoprene has now been available for more than a year. Myrcene is just emerging from the laboratory stage to commercial production. Isoprene is now the accepted "polyolefin" in the manufacture of

"The Metal Cup"

[Photo by U. S. Forest Service]





Synthetic rubber and synthetic resin chemicals from turpentine.

"butyl" rubber and for certain special "Neoprenes" and "Bunas." The potentialities of isoprene in the rubber field can perhaps be best described by the following statement in the Baruch Report: "If isoprene could be manufactured readily, it might well be the best raw material for the manufacture of synthetic rubber."

In accordance with the original plan set forth in the Baruch Report, the Government program included production of 132,000 tons of butyl rubber. Though recent developments have made it necessary to revise the immediate rubber program (now under directives), the ultimate requirements of isoprene may be very substantial. In connection with its efforts to make naval stores products meet special wartime needs, this Division has developed an improved process for the production of isoprene from certain turpentine derivatives, with yields up to 60%. A report on this process has been presented before the American Chemical Society at the April meeting in Detroit.

Myrcene, Another Synthetic Rubber Intermediate

With respect to myrcene, this compound was heretofore more or less a laboratory curiosity, obtainable in relatively insignificant quantities from essential oils such as bay oil and hop oil. By a process

recently developed in this Division, myrcene can now be obtained readily from turpentine in fairly good yield and in a high state of purity. Its availability has made possible extensive experiments on the use of myrcene in rubber synthesis and these experiments have shown that very good rubbers are obtainable. Commercial production of myrcene and of myrcene rubbers has recently been inaugurated by the

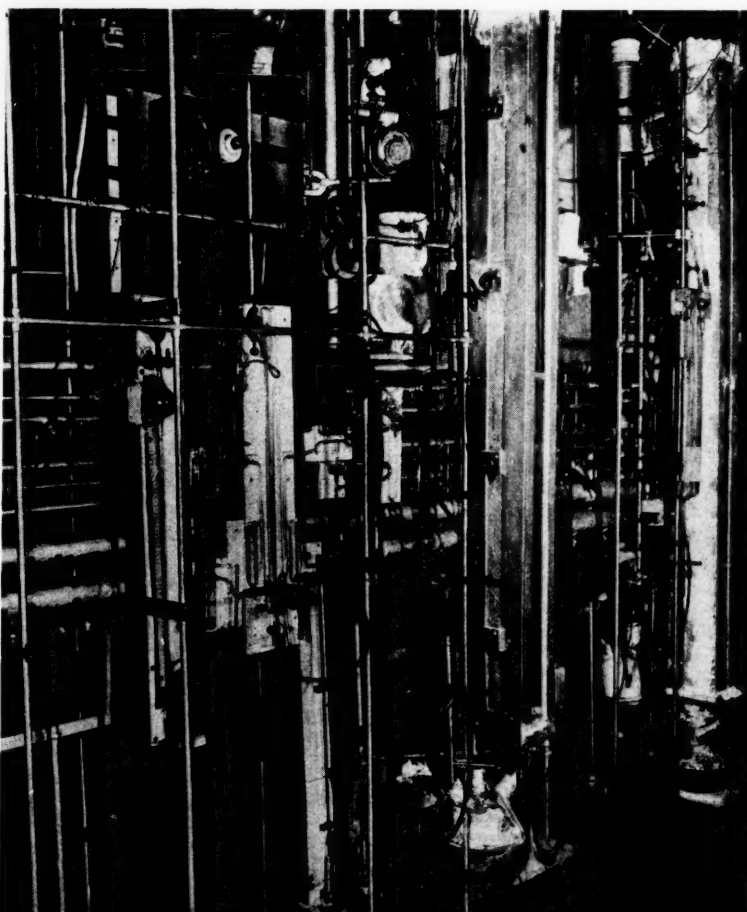
Union Bay State Company of Cambridge, Mass. After considerable research and development, this firm, in close cooperation with the Massachusetts Institute of Technology, has developed a series of myrcene rubbers and rubber latices which are available under the trade name of "Mersopol." These rubbers show interesting properties and appear to have considerable promise in the rubber cement field, as well as in rubber manufactured goods.

Dipentene is another compound that is derivable from turpentine and used in the rubber industry. It is normally obtained from products of the wood naval stores industry and finds extensive use in rubber reclaiming.

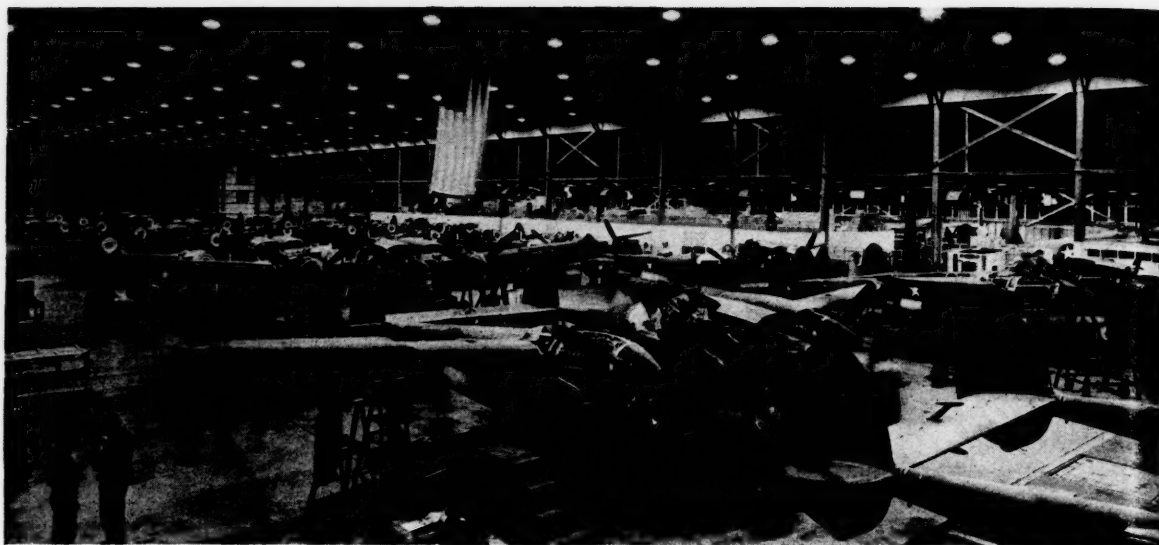
Various Other Chemicals from Turpentine

The components which make up turpentine are highly reactive chemically and can be readily transformed into a variety of compounds, thus making a whole line of chemicals—the so-called ter-

(Continued on page 62)



Laboratory fractionating column assemblies for the study of turpentine.



Texas Airplane Plant Largest in U. S.

IN the air war that is being fought over warm tropical oceans and over ice floes; over steaming jungles, deserts and frozen steppes, no airplane can be universal. Many must be modified into specialized fighting machines with the definite punch required for definite duties in a definite theater of war.

This modification — another word for modernization-up-to-the-minute, is one of the tricks that keep our fighting planes superior to the aircraft of all the world.

The largest of these modification bases in the United States, and the first to get into full operation, is the Lockheed-Vega Modification Center in Dallas, Texas.

Located at Love Field in Dallas, the modification plant comprises four huge hangars, an extensive shop area, and recently completed buildings for flight operations, warehousing and offices.

As the basic airplanes go through modification, they are turned out with almost endless variations to meet specific requirements of climate and combat—and always on special order which means speed, and more speed, and tomorrow is another day.

The twin-tailed Lockheed P-38 "Lightning" Interceptors are "winterized" or "summerized" for arctic or tropic regions by special treatment of oil and fuel lines and carburation. New navigational instruments are installed as they are developed or acquired. Scores of the British version of the P-38 are being Americanized by the installation of standard armament and recently developed instruments.

Vega "Ventura" bombers, which only recently have emerged from close secrecy and have been adopted by the American as well as the British air forces, are being fitted for several missions suggested by their great power and range. Some will operate on off-shore patrol against the Axis submarine menace. Others will tow the gliders which are being developed by the Army Air Forces, when the intricate towing mechanism has been installed, or will tow targets for ground or aerial gunnery practice. Still others are being converted into training ships

for bombardiers and aerial gunners.

Lockheed "Hudson" bombers, the "Old Boomerang" which has fought for the British these several years and has earned a reputation for coming home even when shot half to pieces, is joining the American air forces at Dallas, too. American guns are replacing the British armaments on many Hudsons, new standard instruments are being installed, and general modernization of older models diverted from British delivery is under way. Some Hudsons are already on offshore patrol along the American coasts, others are being fitted for it, and still others are being converted into photographic ships, navigational trainers and target-tows.

Many of the fighting ships are re-camouflaged at Dallas, when an emergency change of orders sends them to a desert instead of a jungle region, or to over-water operation instead of shore duty. Every specialized assignment calls for special equipment which would be excess baggage on any other job.

All this specialization is applied at the Dallas Modification Center, instead of at the Lockheed and Vega factories, for one major reason: The mass production which has changed these factories and made them shoot at larger marks.

"Production methods would require planning and tooling for 18 months to two years, to build per-

(Continued on page 67)

Above—A modification line at the Lockheed Dallas plant—largest modification center in the United States.

Petroleum and Natural Gas of the South

PETROLEUM and natural gas of the great South and Southwest are playing an exceedingly important role in the war effort. They are supplying in ever increasing volumes aviation gasoline of 100-octane rating, lubricating oils for the engines of the air, toluene for T.N.T., synthetic rubber, alcohols, plastics, high explosives, and many other chemical products. In addition, the petroleum industry produces enormous quantities of motor fuel, to propel our motor cars, tanks, jeeps, PT boats, tractors, industrial, naval and maritime engines. Asphalt for roads and airports, and a host of other products are also derived from petroleum.

Hydrocarbons in the form of natural gas and petroleum have profoundly influenced industrial developments in the South and Southwest since the discovery of the vast oil fields and natural gas resources contained therein. Favorable climatic conditions con-

pled with sufficient labor supply have been directly responsible for the building of a number of huge oil refineries and chemical plants in these areas. Cheap fuel and abundant raw materials such as sulfur and brine have also served to accelerate the establishment of a huge chemical industry. The oil industry is generally thought of by the public as the agency which drills holes in the ground and produces crude oil therefrom. For every oil producing well there are five others that have wound up as just a hole in the ground, some of

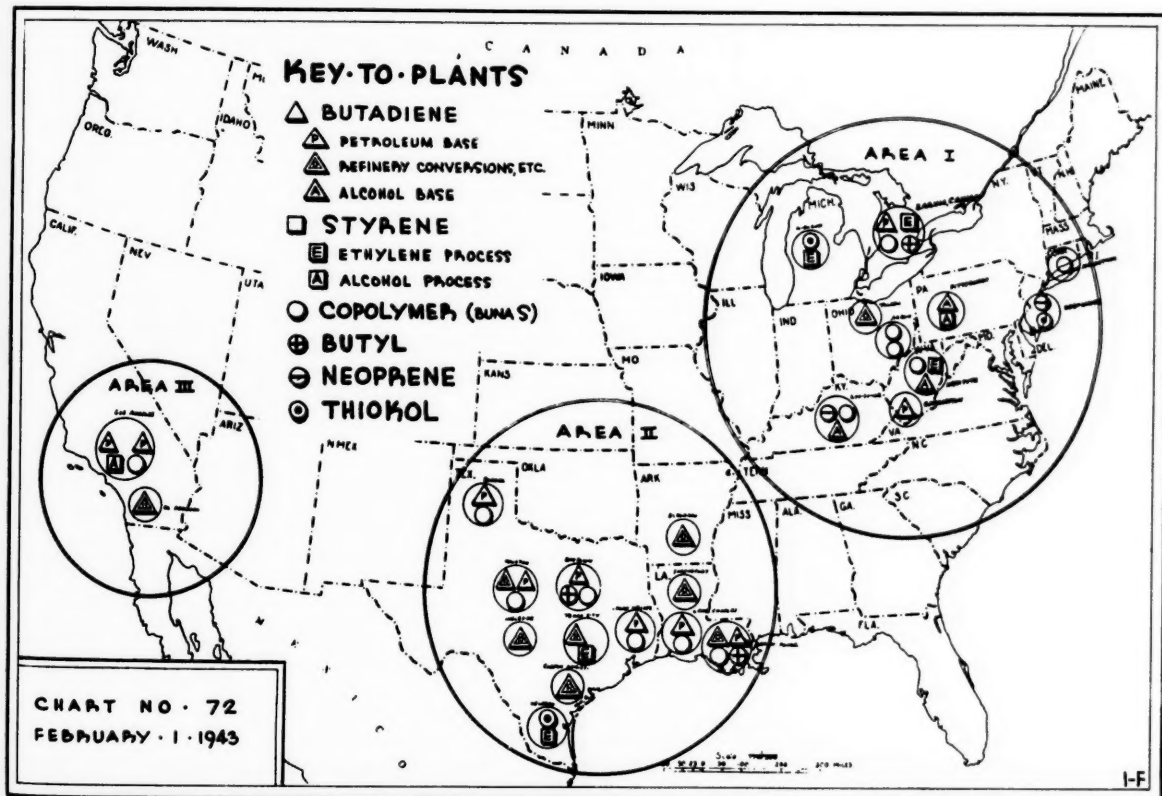
them three miles deep. When found, the crude oil must be separated and processed into gasoline, motor oil, and many other products.

The petroleum industry has also become a chemical industry, a synthetic rubber industry, and a producer of many products for agriculture, etc. There is no phase of our daily lives or the war effort in which petroleum does not play a part. The "all-out" war effort has expanded the oil industry, intensifying its developments, producing vital war materials which were not considered derivatives of crude oil. Fortunately, the South and Southwest have enormous deposits of crude oil and natural gas. The state of Texas is the leading producer of these two products, having an oil production of 483,000,000 barrels per year in 1942.

The following table indicates the oil production and average dollar value per barrel and the daily re-

(Continued on page 50)

Map showing the distribution of plants making synthetic rubber and synthetic rubber materials.





HUGE RAILROAD EXPANSION COMPLETED AT ROANOKE

NOW rated among the largest and most modern in the world, the Roanoke, Virginia, yard and engine terminal facilities of the Norfolk and Western Railway have recently been completed after comprehensive improvements and expansion. Already it has proved to be an important factor in enabling the N. & W. to handle its share of heavy war traffic with the maximum speed and efficiency so essential in the handling of war materials and personnel.

Carried out over a period of more than two years at a cost of approximately \$5,000,000, the program included laying 66 miles of new trackage, construction of a score of new buildings, and a total of about 2,600,000 cubic yards of grading.

The terminal now accommodates approximately 7,400 cars, an increase of more than 32 per cent

\$5,000,000

*yard and engine
terminal facilities
improvement by
Norfolk & Western*

over the former capacity. It includes an eastbound receiving yard of 20 tracks (capacity, 2,450 cars); an eastbound gravity classification and forwarding yard of 46 tracks (capacity, 2,250 cars); a westbound receiving, classification and forwarding yard of 12 tracks (capacity, 950 cars); a westbound empty yard of ten tracks (capac-

ity, 1,570 cars), and an auxiliary yard of 11 tracks with a capacity of 180 cars.

Outstanding in the yard improvement program is the new eastbound car retarder-equipped gravity classification yard, which contains 46 tracks with capacities ranging from 22 to 40 or more cars each. The old classification yard contained only 19 tracks. During the construction of this new yard, a hill along the south side with a maximum height of 65 feet, was cut back 400 feet, two houses were removed and a street was closed in order to provide space for doubling the capacity of the former classification yard.

On the new double-track hump, at the west end of the classification yard, are two new 300-ton automatic scales, which weigh a moving car and record its weight at the rate of three to four cars a minute; a new scale office and a new two-story brick scale and yardmaster's office. Electropneumatic car retarders slow the moving car to the proper speed for weighing and



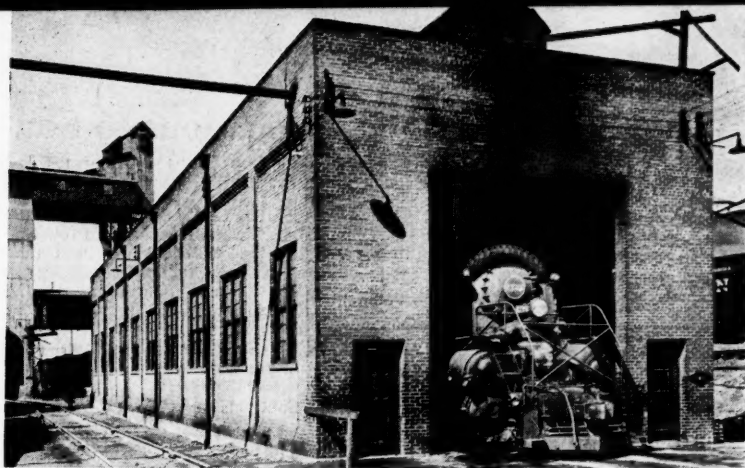
Above—General view of the Norfolk and Western's greatly expanded and improved Roanoke yard. Left—Over the new 300-ton automatic scales at the end of the new gravity classification yard rolls a car full of coal. In the foreground are the new scale office, weighing station and yardmaster's office.

again as the car rolls down the incline of the hump. Operators in three new brick towers control retarders which slow the cars to the proper, safe speed for classification and coupling and throw switches which direct the cars into the proper tracks for making up a new train. There are 14 electropneumatic car retarders, ranging from 34 to 103 feet in length. The latter are among the longest in the country. A new teletype system permits dispatch of instructions direct to the tower operators from the yardmaster's office.

The eastbound receiving yard, which formerly contained 17 tracks with capacities up to about 65 cars, was enlarged to 20 tracks and lengthened to accommodate 110 to 130 cars. This required increasing the length of the tracks to about 6,000 feet, approximately double the previous length. The westbound empty yard now contains ten tracks, as formerly, but they were lengthened from 3,000 feet to about 4,500 feet to accommodate 155 to 160 cars, as compared to the previous 80-car maximum.

To make possible faster and more efficient yard operation, a modern and extensive system of signaling and communication was installed in the new yards. Six different types of communication facilities were selected in order to insure prompt, accurate and complete control over all train and car movement. The systems include a completely modern two-way voice communication system between the hump conductor and the engineers on the locomotive which push the cars over the hump for classification; a teletype system between the hump office and the three tower operators; two-way loudspeaker communication to all parts of the yards; regular telephone lines; emergency telephone lines, and switching signals. In certain portions of the yards, color light signals were used to prevent confusion in the movement of road trains on the running tracks.

Expansion of old facilities and construction of new ones keyed to the work done at the engine terminal with the triple aims of speeding traffic, increasing efficiency and contributing to the safety and



Out of one of the new brick covered locomotive inspection pits noses a large freight engine ready to roll after a thorough servicing in the completely modern building. The addition of such buildings now permits comfortable handling of 135 locomotives per 24-hour period compared to a previous capacity of only 80 engines.

comfort of employees.

Because the roundhouse is a focal point of railroad activity, the expansion project there assumes major interest. Sixteen stalls of the 40-stall building were extended 35 feet by the addition of a brick structure. This makes it possible for even the longest locomotives and tenders to be run completely inside the building and doors to be closed behind them, permitting the employees to work on the engines with a maximum of comfort. The entire roundhouse floor, which formerly was dirt, has been paved with concrete and an experiment in heating the stalls is now under way. Between two stalls steam pipes have been laid under the concrete flooring, resulting in radiation of heat the entire length of the stalls and permitting employees to work in comfort on any part of the locomotives. Roundhouse and machine shop offices, which are a part of the structure, also have been enlarged and additional sanitary facilities have been provided throughout.

A brick and concrete wash, shower and locker building, 45 feet by 139 feet, for the use of shop employees, was built at one side of the roundhouse and another similar building, 43 by 117 feet, was constructed at the other side of the roundhouse for the use of engine men. A third wash and locker building for the use of engine terminal employees also was constructed nearby. This building measures 12 by 110 feet.

To lighten the load on the roundhouse facilities, two outbound locomotive inspection pits were constructed and covered with brick buildings, measuring 30 by 163 feet. These pits and buildings permit employees to service and make small repairs to engines without sending them into the roundhouse.

Two additional inspection pits, each 142 feet long, were constructed for checking inbound engines, a new inspector's office was built and a pneumatic tube system was installed direct from this office to the roundhouse for transmission of reports on the condition of inspected engines.

A double-tracked concrete engine washing platform, 46 by 136 feet, also was constructed together with a small brick building for storage of washing materials. Several cab supply and icing stations were constructed about the yards and engine terminal, and a completely modern icing platform for servicing refrigerator cars was built. This latter facility consists of a platform 556 feet long and 14 feet wide with a number of small brick structures for ice storage and the like and a new office building measuring 14 by 22 feet. This icing platform is equipped with an electrically-operated conveyor belt which moves ice from the storage buildings to points just above the level of the car tops.

Four double-tracked electrically-operated ash hoists were constructed in addition to a similar hoist used for disposing of refuse. A building housing the blacksmith shop and machine shop was constructed as well as several new repair shops, storehouses and

(Continued on page 48)

War Contracts and Allocations to Southern States Exceed \$21,000,000,000 Through February

Prime war contracts and allocations distributed by the various Federal agencies and foreign purchasing missions to the Southern states totaled in excess of \$21,225,982,000 for the period through February, 1943. This is a gain of \$1,607,135,000 for the two month period of January-February, or an average monthly rise greater than that for sev-

eral months. If the \$16,528,392,000 now included in the United States total and classified as "off continent and unassigned" were distributed among the various states, the amount here recorded for the South would undoubtedly be further increased.

Although the contracts placed by allied purchasing missions date from Sep-

tember, 1939, those for the United States only started in June, 1940.

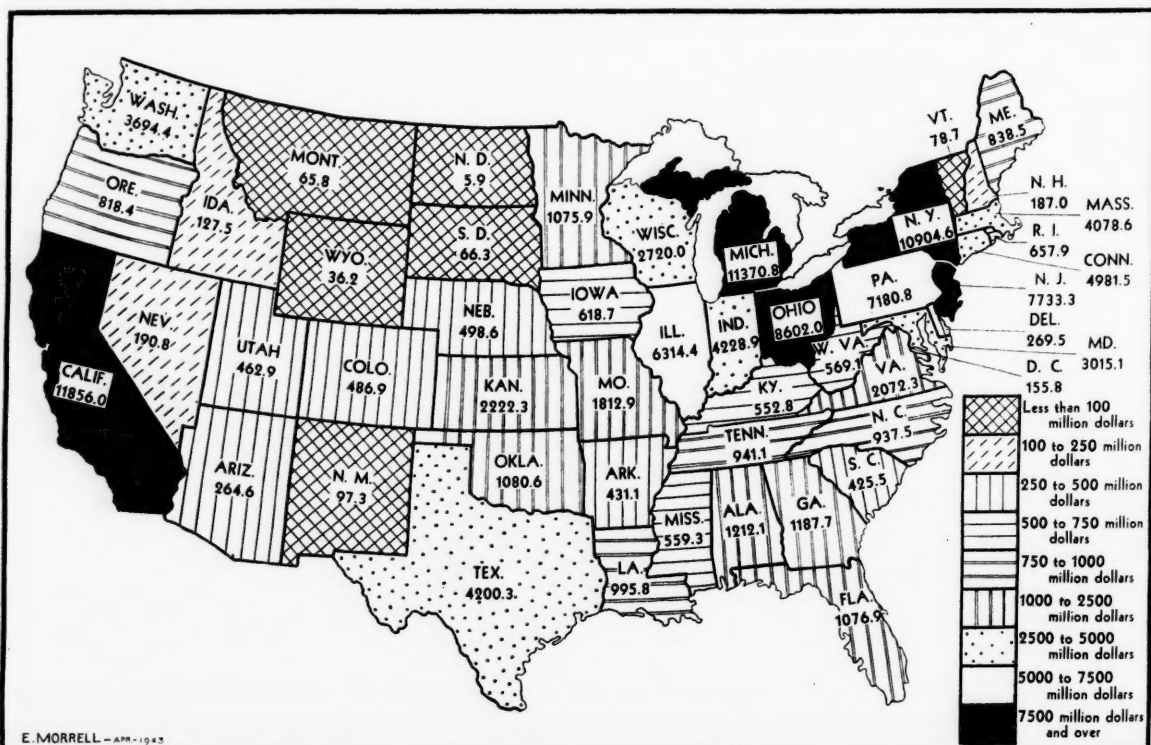
Army, Navy, Maritime Commission, Treasury and allied nations' awards do not include those having a value of less than \$50,000, nor do they include contracts for foodstuffs.

Major War Supply and Facility Contracts and Allocations, June, 1940 Through February, 1943
(Thousands of Dollars)

| | Army, Navy and Maritime Commission | | | Facilities | | Dept. of Commerce | National Housing Agency | Federal Works Agency | N.Y.A. Office of Education | Dept. of Commerce R.F.C. | Total |
|--------------------|------------------------------------|------------|------------|------------|----------------|-------------------|-------------------------|----------------------|----------------------------|--------------------------|-------------|
| | Aircraft | Ships | Miscell. | Industrial | Non-Industrial | C.A.A. | F.P.H.A. | Works | Agency | | |
| Alabama ..... | ..... | 276,858 | 312,215 | 379,944 | 166,209 | 1,270 | 39,711 | 20,213 | 9,104 | 6,619 | 1,212,143 |
| Arkansas ..... | ..... | ..... | 53,485 | 226,544 | 120,849 | 563 | 19,720 | 4,648 | 4,635 | 667 | 431,111 |
| Dist. of Col. .... | ..... | 689 | 5,656 | 20,553 | 46,181 | ..... | 44,593 | 11,354 | 1,614 | 25,167 | 155,807 |
| Florida | 1,200 | 420,787 | 56,069 | 52,088 | 462,686 | 7,246 | 27,640 | 33,652 | 6,947 | 8,619 | 1,076,934 |
| Georgia | 343,032 | 148,773 | 283,138 | 98,883 | 252,793 | 5,047 | 30,869 | 13,246 | 8,800 | 3,095 | 1,187,676 |
| Kentucky | 33,422 | ..... | 107,872 | 197,651 | 143,196 | 1,720 | 8,986 | 11,406 | 7,742 | 40,770 | 552,765 |
| Louisiana | 68,406 | 211,825 | 69,753 | 320,547 | 246,599 | 4,827 | 6,885 | 16,416 | 6,504 | 42,978 | 995,830 |
| Maryland | 1,335,101 | 357,516 | 813,982 | 207,065 | 194,038 | ..... | 71,207 | 15,111 | 4,712 | 16,403 | 3,015,135 |
| Mississippi | 180 | 220,534 | 67,192 | 46,337 | 190,814 | 1,430 | 14,860 | 10,783 | 6,807 | 382 | 559,319 |
| Missouri | 168,778 | 40,092 | 911,319 | 501,402 | 146,608 | 310 | 14,461 | 16,242 | 7,657 | 5,994 | 1,812,863 |
| North Carolina ... | 19,468 | 189,863 | 314,811 | 42,288 | 313,393 | 587 | 31,692 | 17,178 | 7,537 | 678 | 937,495 |
| Oklahoma | 545,853 | ..... | 88,385 | 186,275 | 233,625 | 1,840 | 6,387 | 9,503 | 8,112 | 601 | 1,080,581 |
| South Carolina ... | ..... | 25,219 | 168,267 | 39,941 | 135,458 | 3,674 | 22,888 | 25,597 | 4,334 | 140 | 425,518 |
| Tennessee | 129,781 | 14,573 | 313,213 | 262,911 | 193,265 | 690 | 8,454 | 9,306 | 7,249 | 1,628 | 941,070 |
| Texas | 1,128,888 | 880,175 | 378,463 | 865,519 | 795,348 | 9,710 | 75,034 | 42,774 | 18,196 | 6,197 | 4,200,304 |
| Virginia | 1,050 | 993,621 | 156,807 | 203,946 | 525,775 | 144 | 149,142 | 33,054 | 6,564 | 2,197 | 2,072,300 |
| West Virginia .... | ..... | 86,053 | 196,807 | 256,816 | 7,162 | ..... | 8,367 | 5,430 | 8,242 | 254 | 569,131 |
| South | 3,775,249 | 3,866,578 | 4,297,434 | 3,908,710 | 4,173,999 | 39,058 | 580,896 | 295,913 | 124,756 | 162,389 | 21,225,982 |
| United States .. | 31,628,766 | 17,623,992 | 48,688,058 | 14,872,523 | 11,617,909 | 97,059 | 1,742,394 | 727,451 | 139,678 | 1,094,475 | 128,489,407 |

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" include contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.

War contracts and allocations of all Federal agencies and allied purchasing missions through February, 1943 amounted to \$128,489,407,000. Of this \$21,225,982,000 has been awarded to southern states. Totals for each state in millions of dollars are shown in the accompanying map.



Conservation and Use of Louisiana's Natural Gas

By

ROLAND COCREHAM

Executive Director,

Louisiana Department of Commerce & Industry

LOUISIANA'S vast supplies of natural gas—once considered only a hindrance to the production of oil—have opened up vast new industrial development that is today a vital contribution to the state's war effort, and is certain to have a commanding role in its future economy.

Only a few years ago there was virtually no market for natural gas. There was a popular belief among oil men, however, that blowing of gas into the air would induce the well to "go to oil." How many billions of cubic feet of the precious resource was thus sacrificed is not a good thought to dwell upon.

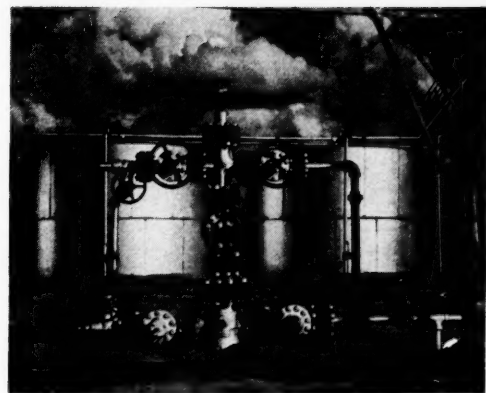
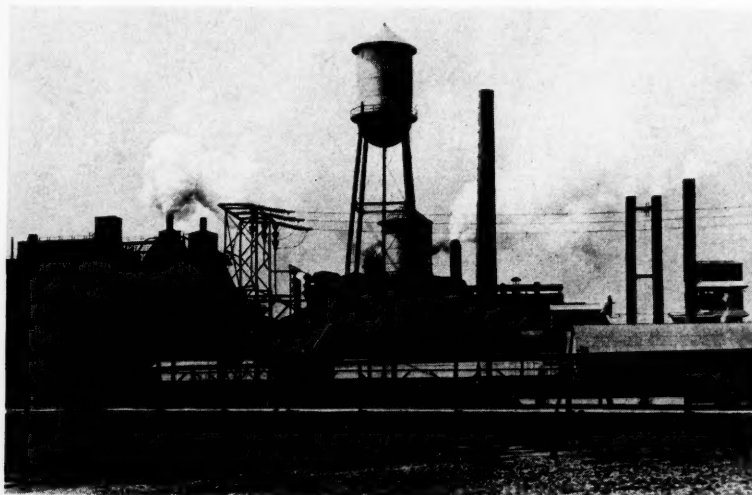
What gas was used was employed principally for heating and the generation of steam and electrical power. As the supply was apparently endless in Louisiana, where there were abundant fields, including the world's largest, this use rapidly increased. Pipelines were laid for conveyance of the gas to metropolitan centers for cooking and heating purposes.

Then the pipelines were run beyond our state's borders, extending for hundreds of miles into industrial centers of other states. The same practice was generally followed in other states possessing natural gas.

The awakening came when various authorities, including the Federal Power Commission, alarmed at the enormous rate of withdrawal, declared that unless restrictive and protective measures were adopted the nation's natural gas resources would soon be completely exhausted. Louisiana's supplies, they said, could not last over 30 years unless exportations were radically curbed.

One illustration of this indiscriminate exportation of gas was supplied by the state of West Virginia. This state, once the leading gas producer of the union, saw heavy withdrawals gradually deplete its reserves until it became

One of Louisiana's largest paper mills. Natural gas is employed at all such mills in the state for cooking the mixture of pulverized wood and chemicals from which paper is made.



A "Christmas Tree" for high pressure gas and oil production used as a safeguard for the deeper reservoirs of the Louisiana Gulf Coastal area. Tanks in the background are for storage of crude oil or condensate.

second among the producing states, giving way to Pennsylvania for first place. Now its gas shortage has apparently reached an acute stage, for recently the Federal Power Commission received an application for the right to construct a pipeline to convey natural gas into West Virginia.

If Louisiana needed an additional reason for conservation of its gas, it could have been found in the fact that a considerable portion of its supply was being piped to states where there were and still are abundant coal reserves, estimated sufficient to last for thousands of years, whereas its gas supply was known to be on the way to exhaustion.

Apparently the desire of these importing states was carefully to conserve their coal supplies by first exploiting fully the energy resources available through piped-in gas. A wise and economic action—but not for the gas producing states!

Fortunately for our state, protective measures were taken, climaxed in 1942 by the adoption by the Louisiana Legislature of a resolution compelling state agencies to oppose the further indiscriminate piping away of our natural gas to other states.

This resolution was inspired primarily because of the dwindling gas supplies in Louisiana, but not entirely so. Another reason was the remarkable achievements of scientists working with natural gas, and developing a much higher

(Continued on page 60)

South's Construction Contracts Near \$116,000,000 in April

SOUTHERN construction contracts as reported by the *Manufacturers Record*, totaled \$115,775,000 during April. This is below the comparable month of 1942, the year when the valuation of awards below the Mason and Dixon line reached an all-time peak of almost four billion dollars. The current decline in newly initiated construction is largely due to a drastic decrease in industrial building.

Highway contracts rose encouragingly during April. The \$12,656,000 total was a gain of forty-one per cent over the figure for the preceding month. Texas, the state where such construction is usually most active, was superseded by Florida in April due to Federal work.

Southern State highway departments, just as are those throughout the rest of the country, are experiencing the difficulties and problems brought about by the war and its accompanying restrictions. The accent is on preserving existing routes and making plans for a post-war program, which up to the present is estimated to involve expenditure of \$170,000,000 for projects approved by the Public Roads Administration in twenty-two states.

Federal authorities have announced that plans are developing rapidly for a \$500,000,000 highway program. Many of the routes are in the neighborhood of urban areas. Seven Southern states so far are numbered among the participants. These are Alabama, with projects at ten of its cities and towns; Kentucky, with projects at thirteen city areas; Louisiana with projects at six cities and towns; Mississippi, with four projects; Missouri, with two; North Carolina, with seven; West Virginia, with two.

Public building and public engineering projects were mainstays in the current April total. The sum of these was \$96,232,000. For public building the figure was \$62,477,000; for public engineering, \$33,755,000. Military construction accounted for seventy-three per cent of the public building total; public housing projects for most of the balance. Intensive activity in airport construction was responsible for the bulk of the engineering total. Sewer and water work amounting to \$3,156,000 was about average.

Publicly financed electric line construction, which in February and March spurred ahead, declined to \$400,000 in April. A temporary increase of activity in this field will result from the War Production Board's decision that thirty-two rural electrification projects are to be revived and completed as rapidly as possible. Completion stages of the individual lines vary from 50 to 89 per cent. Ten of the jobs are in the South, with two each in Virginia and Alabama, and

one each in Texas, West Virginia, Kentucky, Missouri, Mississippi and South Carolina.

Thoughts are also turning to materials and their present and future utilization. Particularly are post war homes being discussed. One authority believes that the house of the future will be standardized and built of parts turned out by mass production methods. Another decries the dangerous lag in private war housing at the present time.

This latter group points out that new war housing construction started during the first quarter of this year is less than one-half of that scheduled by the National Housing Authority. Builders are impeded by frequent and confusing changes of standards by government agencies, it is said, and the further charge is made of failure to interpret Title VI as an emergency measure. Southern housing by private interests so far this year is \$16,881,000, or a little more than one-half of that for the comparable period of 1942.

Public housing work placed under contract in the South for the first four months of this year is valued at \$96,027,000. For the same months of last year it stood at the slightly higher figure of \$100,451,000. More than ninety-eight per cent of the war housing units, says the Federal Public Housing Authority, is scheduled for dismantling after the war.

Temporary construction, claim FPFA officials, conserves critical war materials,

By

S. A. LAUVER
News Editor

protects communities against overbuilding and costs less. Funds required to construct ten permanent family units will finance seventeen temporary units. Cost of temporary construction is roughly placed from 35 to 45 per cent lower.

Private construction, other than the small amount of residential work, continues to decline. Restrictions imposed by conservation order L-41 were slightly eased on minor projects during April. Regulations on production of construction machinery and equipment under limitation order L-192, however, were tightened. Manufacture of certain types of equipment was prohibited; others can be made only for the armed forces and lease-lend purposes.

"Command construction," as defined in priorities directive No. 2 was broadened by the War Production Board to include the remodeling of buildings ordered by the Chief of Staff of the Army or Chief of Naval Operations of the Navy, if the costs of materials for each structure is less than \$10,000. "Command construction," covers projects built under contracts let by the Army engineers, and the Navy's Bureau of Yards and Docks.

Expenditures are limited to less than

South's Construction by Types

| | April, 1943 Contracts Awarded | Contracts to be Awarded | Contracts Awarded First Four Months 1943 | Contracts Awarded First Four Months 1942 |
|---|-------------------------------------|-------------------------------|---|---|
| PRIVATE BUILDING | | | | |
| Assembly (Churches, Theatres, Auditoriums, Fraternal) | \$139,000 | \$255,000 | \$529,000 | \$3,142,000 |
| Commercial (Stores, Restaurants, Filling Stations, Garages) | 192,000 | 113,000 | 323,000 | 3,241,000 |
| Residential (Apartments, Hotels, Dwellings) | 2,510,000 | 2,402,000 | 16,881,000 | 57,282,000 |
| Office ..... | ..... | ..... | 20,000 | 947,000 |
| | \$2,841,000 | \$2,770,000 | \$17,753,000 | \$64,612,000 |
| INDUSTRIAL | \$4,046,000 | \$4,892,000 | \$107,654,000 | \$431,921,000 |
| PUBLIC BUILDING | | | | |
| City, County, State, Federal | \$45,737,000 | \$21,104,000 | \$182,587,000 | \$614,283,000 |
| Housing | 15,304,000 | 10,090,000 | 96,027,000 | 100,451,000 |
| Schools | 1,436,000 | 2,520,000 | 4,755,000 | 14,780,000 |
| | \$62,477,000 | \$63,714,000 | \$283,369,000 | \$729,514,000 |
| ENGINEERING | | | | |
| Dams, Drainage, Earthwork, Airports | \$30,199,000 | \$16,632,000 | \$100,891,000 | \$104,873,000 |
| Federal, County, Municipal Electric | 490,000 | 1,758,000 | 1,877,000 | 9,955,000 |
| Sewers and Waterworks | 3,156,000 | 4,596,000 | 13,382,000 | 29,682,000 |
| | \$33,755,000 | \$22,986,000 | \$116,150,000 | \$144,510,000 |
| ROADS, STREETS AND BRIDGES... | \$12,656,000 | \$10,038,000 | \$39,090,000 | \$57,153,000 |
| TOTAL | \$115,775,000 | \$104,400,000 | \$564,016,000 | \$1,427,710,000 |

\$500,000 for airfields, military housing, alien housing facilities for repair or manufacture of finished items of munitions. Emergency flood control projects can be undertaken if they cost less than \$100,000, as can overseas or theatre-of-operations construction, seacoast fortifications, ports and depots, camouflage and other passive defense projects.

Lumber requirements for new construction in the United States during 1943 are put at eleven billion board feet by the War Production Board and the Department of Agriculture. Need for all purposes, including that required for out-of-the-country projects, raises this figure to thirty-one billion five hundred million board feet. The forecast provides for prospective construction under severe limitations. Government officials are not certain that the supply will enable consumers to obtain their war needs.

Domestic consumption of portland cement this year will be 107,788,000 barrels, it is estimated by another War Production Board announcement. This figure represents a decrease of thirty-nine per cent from the 1942 total of 177,480,000. The building materials division of the Board says the estimate should furnish an approximate indication of the probable drop in requirements for sand and gravel used in construction.

While these verbal straws in the wind were being proclaimed by government officials, President Roosevelt authorized the National Park Service to assist the War Department in making a study of the Alaskan portion of the Alcan highway to insure orderly development of its recreational phases as well as the possibilities of permanent settling of the area along the route. Approximately 1,360 miles of the road's total 1,670 miles are located in Canadian territory.

Few details can be revealed about in-

| | April, 1943 | | Contracts | Contracts |
|--------------------|----------------------|----------------------|----------------------|------------------------|
| | Contracts | Contracts | Awarded | Awarded |
| | Awarded | to be | First | First |
| | | Awarded | Four | Four |
| | | | Months | Months |
| | | | 1943 | 1942 |
| Alabama | \$2,191,000 | \$4,382,000 | \$19,525,000 | \$58,689,000 |
| Arkansas | 844,000 | 498,000 | 21,595,000 | 23,364,000 |
| Dist. of Col. | 484,000 | 730,000 | 3,552,000 | 26,058,000 |
| Florida | 33,850,000 | 19,232,000 | 74,457,000 | 54,828,000 |
| Georgia | 8,005,000 | 7,246,000 | 39,125,000 | 61,944,000 |
| Kentucky | 3,534,000 | 2,770,000 | 15,829,000 | 68,563,000 |
| Louisiana | 1,657,000 | 3,715,000 | 15,115,000 | 117,587,000 |
| Maryland | 5,841,000 | 6,140,000 | 44,850,000 | 97,993,000 |
| Mississippi | 4,491,000 | 7,269,000 | 15,519,000 | 78,255,000 |
| Missouri | 2,410,000 | 4,393,000 | 9,723,000 | 22,460,000 |
| N. Carolina | 4,507,000 | 5,659,000 | 17,535,000 | 58,874,000 |
| Oklahoma | 4,065,000 | 818,000 | 14,903,000 | 102,935,000 |
| S. Carolina | 4,599,000 | 3,780,000 | 20,786,000 | 31,853,000 |
| Tennessee | 10,056,000 | 3,903,000 | 33,170,000 | 112,077,000 |
| Texas | 22,795,000 | 18,027,000 | 178,266,000 | 317,908,000 |
| Virginia | 4,577,000 | 12,338,000 | 35,449,000 | 165,142,000 |
| W. Virginia | 1,869,000 | 3,500,000 | 6,617,000 | 29,180,000 |
| TOTAL | \$115,775,000 | \$104,400,000 | \$564,016,000 | \$1,427,710,000 |

dividual projects, especially those of an industrial character. Government announcements last month featured completion of an important addition to the country's pipe transportation system in Florida. Another was finished in the upper South. Awards were made also for

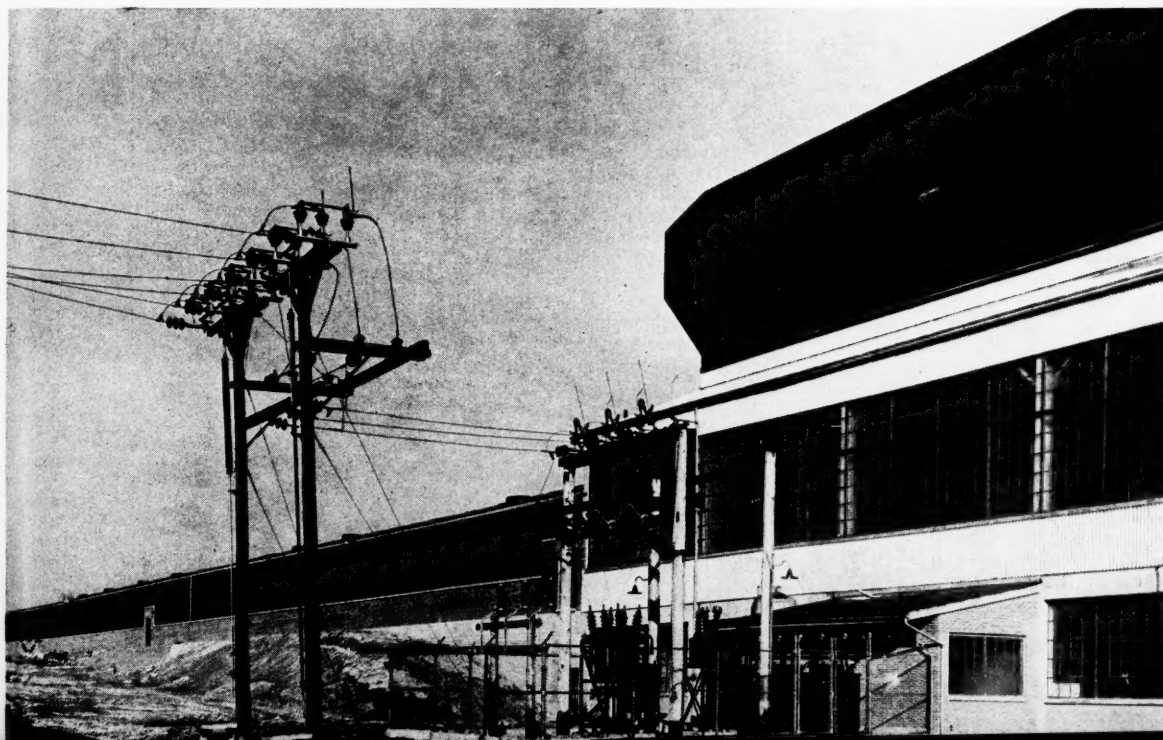
the second line to connect Texas with the East, as construction proceeded on the final leg of the first line which already is in operation to Illinois.

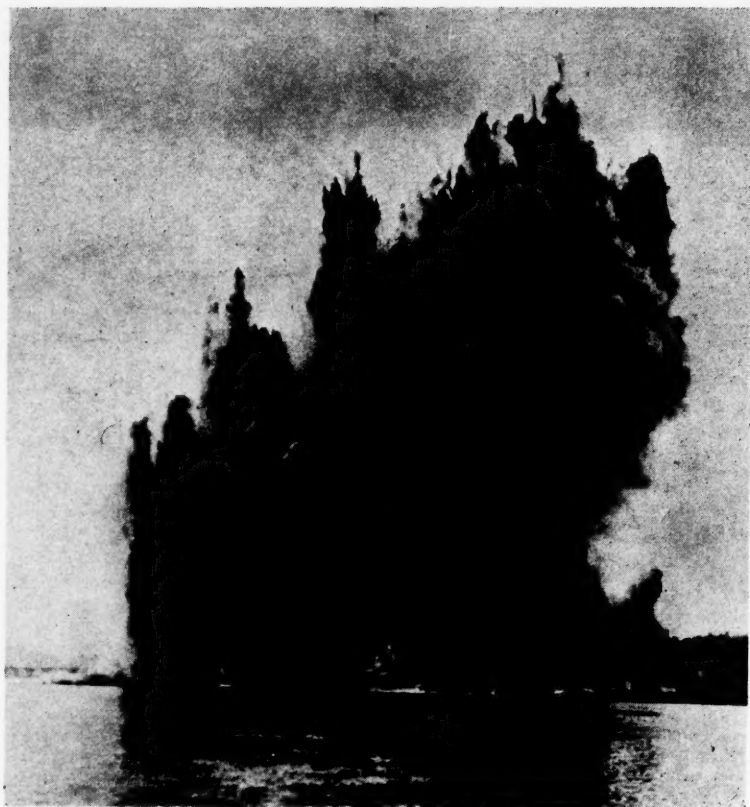
The Florida line, as described by Secretary of Commerce Jesse Jones, extends 200 miles between Carrabelle, on the west coast of the State, to Jacksonville, on the Atlantic Ocean side. Its eight-inch pipe made the first run of gasoline April 22. Costing \$4,144,000, the line has a daily capacity of 25,000 barrels of gasoline and light oil.

The other project was the 180-mile long extension of the Plantation Pipe Line Company's system. Officially placed in operation last month, the branch reaches from Greensboro, N. C., to Richmond, Va., and involved expenditure of \$4,350,000. Points as far north as Washington and Baltimore can now be served by oil pipe transportation. The Planta-

(Continued on page 58)

Corning Glass Works' new plant at Parkersburg, W. Va., for the production of optical glass, part of which is visible in this picture, is of steel frame construction. Foundation footings and walls are reinforced concrete, as are the floor slabs. Walls are red face brick, with architectural projected sash in the office section and commercial side wall type sash in the manufacturing section. The roof is corrugated asbestos, concrete plank and wood deck, with a four-ply smooth surface 20-year bonded waterproofing. The H. K. Ferguson Co., industrial engineers of Cleveland and New York, designed and built the plant.





Sixty thousand pounds of dynamite will be used in a series of shots to blast a trench for the "Big Inch" oil pipeline being built between Texas and the East. This particular shot of 16,000 pounds of dynamite—the largest single charge in history for a pipeline river crossing—threw rock, water and dirt 300 feet high in cutting a ditch 442 feet long and eight feet deep.

Graduate Fellowship Plan Continued

Allied Chemical & Dye Corporation announces continuation of its graduate fellowship plan in the school year 1943-44. Although the plan was conceived and established in peacetime, the company feels that in view of the valuable assistance in the war effort being rendered by well trained chemists and chemical engineers, aid to outstanding graduate students in completing their work for the Ph.D. degree is still of the highest importance. The recipients of the fellowships and the subjects are chosen by the universities; subjects are not restricted to those connected with the products or interests of Allied's operating divisions and subsidiaries. Stipend of each fellowship is \$750.

The universities and colleges to which awards have been made for 1943-44 are:

University of California, California Institute of Technology, Columbia University, Cornell University, Harvard University, University of Illinois, The State University of Iowa, Massachusetts Institute of Technology, University of Michigan, University of Minnesota, Northwestern University, Ohio State University, University of Pennsylvania, Pennsylvania State College,

Princeton University, Purdue University, University of Wisconsin, Yale University.

Gulf Oil Corporation Completes 100-Octane Gasoline Plant

Completion of a new Houdry catalytic cracking unit for the production of 100-octane aviation gasoline at the Gulf Oil Corporation's refinery at Port Arthur, Texas, was announced recently by J. Frank Drake, president. This unit will greatly increase the production of 100-octane aviation gasoline, the super fuel required by bombers and fighter planes to carry the war to Berlin and Tokyo.

The completed unit is a part of Gulf's aviation gasoline program being carried out in cooperation with the Government. This unit was rushed to completion with the aid of a directive of the War Production Board. It was entirely financed by the company, which to date has expended something like \$15,000,000 on increasing its aviation gasoline facilities at Port Arthur. The entire output of these facilities is supplied to the fighting forces, being under contract to the Government.

"This new Houdry unit," Mr. Drake

said, "marks the completion of only a part of Gulf's construction program. Work is continuing on other projects here which will further increase our output of 100-octane gasoline."

"This unit marks a many-fold increase in our output of 100-octane gasoline at Port Arthur since 1938, when we put in operation one of the first high octane gasoline plants in the country—at that time a wholly untried and unproven process."

"Since 1938 Gulf's facilities for producing this super fuel have been expanded almost continuously, each new unit embodying the latest technological developments. Early in 1940 we added an alkylation plant, the newest development in aviation gasoline manufacture at that time. Early this year we completed a second alkylation plant. This new catalytic cracking unit, too, is one of the latest developments in refining technology."

"The new Houdry unit was about twelve months in building. It covers a large area and includes many novel features. The control room, which houses the instruments and gauges that tell the operators at a glance the conditions at any point on the huge unit and assists them in controlling these conditions for the most efficient operation, is completely air conditioned."

Contracts for 356 Ships Go to Southern Yards

Contracts for the construction of 929 new merchant ships, including 411 new design "Victory Ships" as well as 234 high speed tankers, were announced recently by the United States Maritime Commission. Of these, Southern shipyards were awarded contracts for 356 including 179 Liberty ships, 112 Victory ships, 28 tankers, 27 C-2 cargo ships and 10 C-3 passenger-cargo ships.

The new vessels, all of which will be completed by the end of 1944, will be constructed in shipyards in all parts of the United States. These contracts mark the first to be awarded for the construction of "Victory Ships" which will supplant the familiar Liberty ships as the principal emergency types in the Commission's program.

Although of approximately the same deadweight tonnage as the Liberty, the "Victory Ship" will be larger and considerably faster than its predecessor, and turbine propulsion will be installed in many of them.

The list of Southern yards and ships to be constructed under these new contracts is as follows:

| Yard | No. of Ships | Type |
|---|--------------|---------|
| Bethlehem-Fairfield Shipyard | 15 | Liberty |
| Baltimore, Maryland | 112 | Victory |
| J. A. Jones Construction Co., Panama City, Florida | 57 | Liberty |
| J. A. Jones Construction Co., Brunswick, Georgia | 55 | Liberty |
| Alabama Dry Dock & Shipbuilding Co., Mobile, Alabama | 28 | Tankers |
| St. Johns River Shipbuilding Co., Jacksonville, Fla. | 52 | Liberty |
| Ingalls Shipbuilding Corporation, Pascagoula, Mississippi | 10 | C-3 |
| North Carolina Shipbuilding Company, Wilmington, North Carolina | 27 | C-2 |

CONTRACTORS and SUB-CONTRACTORS WANTED

For information, blue prints, specifications, etc., on the following items write or telephone the Philadelphia or Baltimore office of the War Production Board, quoting the symbol number of the item in question. You will then be put in touch with the engineer assigned to that item. Please quote the Manufacturers Record.

Ref. Buescher-15-1

A Government Agency requires facilities for casting three LOW PRESSURE STEAM ENGINE CYLINDERS. Deliveries 90-120 days. Approximate dimensions: 9' x 8' x 9', weight 30,000 lbs. Material: Cast Iron. Patterns furnished.

Ref. Buescher-15-2

A Government Agency requires sixteen 36" and eight 34" SINGLE FACE COMPOSITION GATE VALVES. 34" Valve Overall dimensions:—length 101 1/2", width 42 1/2", thickness 17". Equipment required to face valve: 64" Vertical Boring Mill. 36" Valve overall dimension:—length 111", width 44 1/2", thickness 17". Equipment to face valve:—65" Vertical Boring Mill.

Ref. Buescher-16-1

A Government Agency requires 360 VACUUM PUMP DRIVE SHAFTS. Deliveries:—60 per month starting May, 1943. Dimensions:—Bevel Gear 1.417" P. D., shaft length 5 3/4", diameter 3/4". Tolerances: Gears .002" to .006" when rolling with mating master; surfaces and P.D. of gears and splines must be concentric, flat, parallel and square to each tooth within .002" full indicator reading. Gear located near middle of shaft. Included angle of gears, 45 degrees, 20 degree stub tooth form. Spline data:—stub tooth form 30 degree pressure angle; pitch diameter .600"; Rockwell on case C30N77-80, Rockwell on Core C32-40. External grinding on shaft .001" tolerance. All material will be furnished.

Ref. Buescher-16-2

A Government Agency requires 380 FUEL PUMP DRIVE GEARS. Deliveries to start May 1943. Dimensions:—Bevel gears 2.000" P.D.; shaft length 1.745", diameter .750"—.002". Tolerances:—Gears .002" to .006" backlash when rolling with mating master; surface and pitch diameter of gears must run true with each other within .002". Gear located at end of shaft. Included angle of gears 45 degrees, 20 degrees, 20 degree stub tooth form. Rockwell on core C32-40; Rockwell on case C30N77-80. All material will be furnished.

Ref. Buescher-16-3

A Government Agency requires 340 IMPELLER SHAFTS. Deliveries to start June 1943—60 per month. Dimensions:—Spur Gears 1.500" P.D.; Shaft length 5.58", diameter .7873" plus .0003". Tolerances:—Gears .001" to .004" when rolling with mating master gear; surfaces, spline, P.D. of gear and threads must be concentric, parallel, and true to each other within .0003" to .002" full indicator reading. Gear located near mid-section of shaft. 20 degree stub tooth form. Splines equally spaced to each

other within .001"; threads 5/8"—18 .5859"—.5884" P.D. Rockwell on core C32-40; Rockwell on case C30N77-80. External Grinding on Shaft, .0003" Tolerance. All material will be furnished.

Ref. Buescher-16-4

A Government Agency requires 619 SHAFT ACCESSORY DRIVES. Deliveries 60 per month, starting June, 1943. Dimensions:—Bevel Gear—1.600" P.D.; Shaft length 6—25/64"; Diameter .738" plus or minus .0005". Tolerance gears—.002" to .006" when rolling with mating master gear; surfaces and P.D. of gear and spline must be concentric, parallel and true within .002" full indicator reading. Gear located near end of shaft—90 degree included angle, 20 degree pressure angle. Spline, Fellows—14 1/2 degree pressure angle; 30 teeth, 32 pitch. Rockwell on core C32-40; Rockwell on case C60 Min. External grinding on shaft plus or minus .0005". All material furnished.

Ref. Buescher-16-5

A Government Agency requires 272 STARTER SHAFTS. Deliveries 60 per month, starting June 1943. Dimensions:—Spur Gear—3.600" P.D., Shaft length—5.283"; Diameter—1.3735"—.001"; Tolerance:—Gears .002 to .006 when rolling with mating master gear. Surfaces and P.D. of gear must run true within .002" full indicator reading. Gear located at end of shaft 20 degree stub tooth form. External splines equally spaced within .001". Rockwell on case C60 min. Rockwell on core C-40-47. External grinding tolerance .001. All material will be furnished.

Ref. Buescher-16-6

A Government Agency requires 365 CRANKSHAFT GEARS. Deliveries 60 per month, starting in June. Dimensions:—Spur Gear 5.143" P.D.; Width .88" 20 degree stub tooth form, 36 teeth 7/9 pitch; Tolerance — Gear — .006" to .010" backlash when rolling with mating master. Surfaces and P.D. of gear must be concentric, parallel, flat and true to each other within .002" full indicator reading. Rockwell on core C32-40. Rockwell on case C-60-63. Grinding Tolerance .001. All material will be furnished.

Ref. Buescher-16-7

A Government Agency requires 340 GEAR AND PINION IMPELLER DRIVE. Deliveries 60 per month starting in June. Dimensions of small spur gears—20 degree stub tooth, form—13 teeth 7/9 pitch 1.857" P.D. Width—.625", .004" to .008" backlash when rolling with mating master gear. Large spur gear—20 degree stub tooth, form—66 teeth, 12/14 pitch, 5.500" P.D. Width

.625" .001" to .004" when rolling with mating master gear. Rockwell on core C32-40, Rockwell on case C60-63. Surfaces and P.D. of gears must be concentric, parallel flat and true within .002" full indicator reading. Grinding tolerance .0004". All material will be furnished.

Ref. Buescher-16-8

A Government Agency requires 958 TACHOMETER AND FUEL PUMP DRIVE SHAFTS. Deliveries:—80 per month, starting May, 1943. Dimensions:—Bevel Gear 1.800" P.D., shaft length 6.219 inches. Diameter:—.7485"—.001. Tolerance:—Gears .002" to .006" backlash when rolling with mating masters. Surfaces and P.D. of gears and splines must be concentric, flat, parallel and square within .002 full indicator reading. Gear located near middle of shaft, included angle of gears—90 degrees, 20 degree pressure angle. Spline data: 30 degree stub tooth form .1571 circular pitch. Rockwell on core C32-40; Rockwell on case C60-63. External Grinding on shaft .001 tolerance. All material will be furnished.

Ref. Buescher-16-9

A Government Agency requires 569 ACCESSORY DRIVE GEARS. Deliveries:—60 per month starting in June, 1943. Dimensions:—Spur Gear—4.571" P.D.; 20 degree stub tooth form; 32 teeth 7/9 pitch; width .1132" Tolerance—.002" to .006" when rolling with mating master gear. Surfaces and P.D. of Gear to be concentric, parallel, flat and true within .0005" full indicator reading. Rockwell—C47-51. All material will be furnished.

Ref. Buescher-10-1

A Penna. manufacturer requires additional facilities for the production of CHAIN FITTINGS. Various sizes, ranging from 3/4" to 2 3/4". Material will be furnished by prime contractor for at least a portion of the requirement. Dies to be supplied by subcontractor. However, the blocks will be available for die sinker. Equipment required: 1000 lb. to 8000 lb. drop forge hammers.

Ref. Chase-14-1

A Penna. prime contractor requires continuing machining facilities for two sizes of Aviation Engine CYLINDER BARRELS OF AMS 4382 steel forgings about 7 1/2" O.D. x 9 1/4" long. Total quantity per month, 13,650; minimum tolerance, .001. Equipment or equivalent required: Bullard Multi-matic, Lodge & Shipley Duomatic Lathe, Fay Automatic, Bryant Internal Grinder, Exello Thread Grinder, Magnaflex. Also corresponding sizes of CYLINDER HEADS approximately 8" x 12" x 9" overall, of Aluminum Co.'s alloy 142-T61. Total quantity per month, 2,750, assembled on respective size Cylinder Barrels included in the above quantity. Minimum Tolerance .001. Equipment or equivalent required: W & S Turret Lathe, Cinn. Bickford Drill, Multi Drill, Radial Drill, Delta Drill Press, Cinn. Auto. Mill, Hall Planetary Mill, Garvin Mill, Vertical Mill, Exello Dia. Borer, Kollerflex Machine, Gehrich Oven. Prime Contractor, who is currently producing these items, will supply all castings, rough turned and bored forgings, inserts, studs, etc., all of which are available for immediate production. Priority AA1. Workmanship must (Continued on page 58)



MAY NINETEEN FORTY-THREE

Rayon Fiber Designed for Worst Spinning

A new viscose rayon staple fiber type described as "varied staple length," which is specially designed for use by the worsted spinning trade, has been developed in the research laboratories of the American Viscose Corporation and is now in commercial use. The new fiber differs from regular types in that each lot manufactured contains fibers that vary in length, instead of all being the same length. As a result there is a carefully calculated distribution of fibers of different lengths closely resembling the distribution or "shoulder" found in natural wool.

The fiber lengths are precision controlled by the producer and at present the product is being offered in several varieties, as, for example, in lots in which the length of the fibers declines gradually and evenly from 6 to 3½ inches, from 5 to 3½ inches, and from 3 to 2½ inches. In all other respects the product is the same as standard viscose rayon staple fiber.

The controlled varied staple length

achieved provides a blend of fiber lengths that complements those found in wool to produce a more evenly spun yarn.

H. K. Ferguson Company's 25th Anniversary

Private industry's record in war production is a fair indication of the capability of business and industry to solve post-war problems for themselves and for the Nation, Harold K. Ferguson, president of The H. K. Ferguson Company, Industrial Engineers and Builders of Cleveland and New York, said recently in a message commemorating the 25th anniversary of the founding of his company.

The Ferguson Company, founded in 1918, was one of the first organizations in the United States to offer "a complete industrial service," consisting of designing, building and equipping plants and factories ready for operation by their owners.

"No phase of our war program has been carried out with greater dispatch or with greater success than our production program," Mr. Ferguson said. "Actual assembly line figures of today were commonly regarded in the confusion of two years ago as astronomical goals to be sought for but very likely never attained. Today, even those marks are being surpassed.

"Once a goal is set," he continued, "the American system of free enterprise is the most efficient agent in the world through which it may be accomplished. The brains in American business and industry are the most competent, and at the same time the most practical, ever assembled. They made the United States the outstanding manufacturing nation in peace time, and no one doubts that the same is true in war time. These men should, and will, take the lead in solving our post-war problems."

Mr. Ferguson is credited with originating the "standard factory" principle of building, developed during World War I when manufacturers were clamoring for additional floor space. By convincing them they should erect buildings of standard design and construction, and by being able to supply prefabricated steel girders, he was

The first plume of smoke from these towering absorbers at Dow Magnesium Corporation's new plant, shown at top, gave the signal that production of magnesium metal was under way this week at the fifth Dow-process plant erected by The Austin Company for the Defense Plant Corporation. Dr. Willard Dow, President of The Dow Chemical Company, looked on as one of the new plant employees poured the first ingot of metal. Bus bars of solid silver are used here to replace copper needed for the manufacture of shells and other war equipment in which no substitute will do. In addition to using silver in the bus bars, the plant employs wood, plastics and other non-critical materials wherever possible so that the need for steel and other essential war metals is at a minimum.

able to guarantee delivery on plants in from 45 to 60 working days.

"Since our founding we have pioneered toward standardization in design and construction," he said. "We have been able to do this on a cross-country basis and in many industries, and we, together with our clients, have found that this technique is one of the best assurances for economical building."

The Ferguson Company has designed, built and equipped facilities for many different industries, including foundry, forge and machine tools, chemicals and allied products, food processing, paper and paper products, soap, automobile, rubber and synthetic rubber, glass, paint, ceramic, electrical equipment, furniture, printing, steel and metal working, radio and munitions.

Mr. Ferguson said he knew that large organizations are looking to the future—"to the day when products of peace, rather than products of war, will roll from their assembly lines."

"It is evident from inquiries made to our organization that industry is planning for the future," he said. "Interest in industrial research is at its highest point in history. Scientists and technicians are discovering every day new methods and new products for post-war consumption, and at the same time they are making unbelievable contributions to the war effort.

"Industry has never been in better shape to avoid confusion after the war than now," he emphasized.

A recent achievement for the company was designing and erecting buildings for a large synthetic rubber plant in three-and-a-half months. The plant produced rubber less than five months after it entered the design stage.

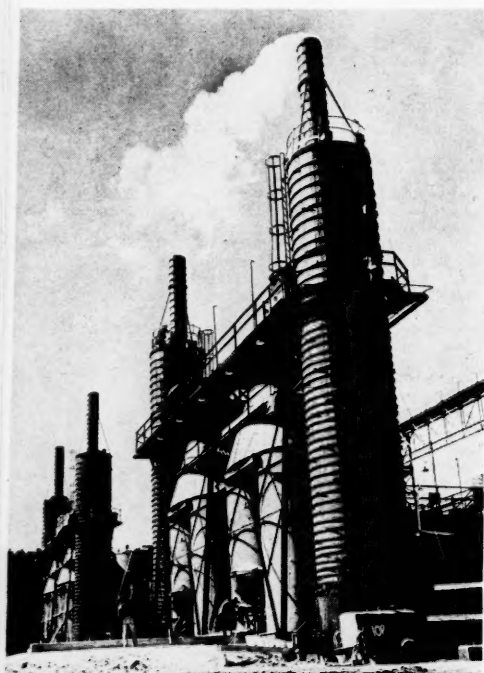
The company was this month awarded the coveted Army-Navy "E" for its part in designing and building the Rocky Mountain Arsenal, a large plant for Chemical Warfare Service. It was in operation several months ahead of schedule and at a cost several million dollars under original estimates.

Springvale Bauxite District, Georgia

A guide to prospecting for additional reserves of bauxite (aluminum ore) in the Springvale mining district, Randolph County, southwestern Georgia, has been released by the U. S. Geological Survey.

About 16,000 tons of bauxite was mined in this district between 1916 and 1920, but no mining has been done since. Preliminary work indicates that many additional small to medium-sized ore bodies can be found in the Eocene Nanafalia formation near Springvale. A map that shows those areas in which drilling is most likely to reveal bauxite has been prepared and is accompanied by a brief descriptive text.

Individuals and companies interested in the development of the district may obtain photostat copies of the map and accompanying text from the Director, Geological Survey, Washington, D. C.



Greensboro to Richmond Pipeline

Completed

COMPLETION of a \$4,350,000 pipe line from Greensboro, N. C., to Richmond has linked this city and surrounding area directly to large oil refineries in Louisiana and Texas. The new line, built by the Plantation Pipe Line Company, is 180 miles long and will deliver gasoline, kerosene, and heating oil at the rate of 30,000 barrels a day when all pumping stations are placed in service. Initial delivery capacity will be about 15,000 barrels a day.

The line will assure an uninterrupted flow of gasoline into this area and products will be transhipped by tank truck and barge as far north as Washington and possibly Baltimore. Deliveries will be received locally at the storage plants of Standard Oil Company of New Jersey, American Oil Company, Pure Oil Company, Shell Oil Company, the Texas Company, and Continental Oil Company.

Pipe line officials were quick to point out that the new line will not necessarily increase the supply of gasoline in Virginia but that extension of the line to this point will free nearly 800 to 900 tank cars for service in other areas where shortage has been acute because of lack of transportation.

During the past winter this number of tank cars has been used to transport gasoline and heating oil from the pipe line terminus at Greensboro into Virginia.

The new line connects at Greensboro with the Plantation Pipe Line, which runs from Baton Rouge, Louisiana, and was completed a year ago at a cost of \$25,500,000. The capacity of the Plantation line was increased on February 1 from 60,000 barrels a day to 90,000 barrels to provide capacity deliveries to the Richmond line without reduction of deliveries to points along the Plantation Line.

At Baton Rouge the Plantation Line connects with the Bayou Pipe Line, which extends to Port Neches and Baytown, Texas. Gasoline coming from Texas will travel some 1200 miles to reach Richmond. This is a record distance for delivery of gasoline by pipe

line. Both the refining centers in Louisiana and Texas will supply gasoline and other products.

Construction of the Greensboro-Richmond line was initiated by the Petroleum Administrator for War. In normal times Richmond and Virginia were supplied with petroleum products by tankers sailing out of the Gulf of Mexico and discharging at Sewells Point near Norfolk. The submarine menace, plus the use of tankers to carry gasoline and oil to the Fighting Forces, have greatly reduced delivery by this means.

WPB approval for construction of the line was obtained when it was shown that it would require only a small amount of new critical materials. The eight-inch pipe was dug up in Texas where it was

little used. The pipe had to be scrubbed inside and out and trimmed before laying in the line to Richmond. The reconditioned pipe began arriving for laying in the Greensboro-Richmond line 14 days after it had been dug out of the ground in Texas.

Construction of the line to Richmond began on November 26 last year, and was completed in 90 working days. Thirty days were lost due to bad weather, though much of the work progressed in rain and freezing weather. Ditch for the pipe which lies about three feet underground had to be blasted through frozen ground at some points. Top record for laying of the pipe in any one day was 4½ miles.

Four pumping stations propel the gasoline through the pipe, pushing it over hills and under rivers on the way to Richmond. Acute shortage of pumping motors was surmounted by acquiring and reconditioning second-hand motors.

Pipe lines operate on a dispatching system similar to that of railroads. The line is a common carrier, receiving shipments, or tenders as they are called, at the head of the line and pumping them into the line on a scheduled day and at a specific hour. One tender will stretch out for many miles in the pipe. The consignee receives notice of when his shipment may be expected and cuts into the line to take it off. Additional tenders which follow mix with each other only slightly, because of carefully controlled velocity, and each consignee receives the product intended for him.

The Plantation Pipe Line Company engineered and built the Greensboro-Richmond Line for the Defense Plant Corporation and will operate it for the Defense Supplies Corporation. Plantation is jointly owned by Standard Oil Company (New Jersey), Shell Union Oil Corporation, and Standard Oil Company (Kentucky).

The Plantation line proper is a
(Continued on page 71)

Governor Darden of Virginia opened the Greensboro-Richmond 180-mile pipeline linking Virginia with the refineries of Louisiana and Texas. At bottom the Governor draws off a sample of gasoline after opening the valve which released a flow of 1,260,000 gallons of gasoline per day.



Important New Industrial Plants and Expansions in the South During April

ARKANSAS

OZARK — dehydration plant — Ozark Packing Co., Inc., has under construction vegetable dehydration plant.

Pipeline—R. & M. Construction Co., Petroleum Bldg., Oklahoma City, has contract for 101 miles of pipeline from Texas gulf coast to Southern Indiana, for War Emergency Pipeline Corp., with headquarters at Cincinnati, Ohio; other contracts let to Williams Brothers Corp., National Bank of Tulsa Bldg., Tulsa, for two links, and one link each to Sherman & Allen, N. A. Saigh Co., Winston-Guthrie-Bacon, Oil States Construction, Swinerton & Walberg, Midwestern Engineering & Construction, and J. C. Truman; line will be of 20-in. diam. pipe; will extend from Houston-Beaumont refinery district in Texas to a point near Little Rock, Ark. and from there on to Seymour, Ind., will parallel the 24-in. pipe line now in operation from East Texas to Norris City, Ill.; construction now under way on second leg of the pipe line from Norris City to the Philadelphia-New York District; approval has been given for the second leg from Indiana to the East Coast.

FLORIDA

MIAMI — repairs — Rodney Miller, Inc., 4220 Ponce de Leon Blvd., Coral Gables, has contract for repairs and alterations to Ryan Bldg., 400 S. W. 2nd Ave. for Miami Shipbuilding Corp., 615 S. W. Second Ave.; cost \$30,000; Jorgensen & Schreffler, Engrs., News Tower, Miami.

ZELLWOOD — dehydration plant — Florida Dehydration Co. will rebuild burned plant, on old foundation; 1-story; 180x68 ft.; conc. floors; metal sash; asphalt roof; install oil burner and steam heat; work by company's engineer and crew; cost \$50,000; Charles O. Andrews, Jr., atty.

GEORGIA

ATLANTA — engine building — Southern Railway, c/o Chief Engr., Washington, D. C., let contract to Brice Building Co., 215 S. 18th St., Birmingham, Ala., for construction of a Diesel Engine building, at \$65,000.

ATLANTA — addition — Armor Insulating Co., 800 Forrest Rd., N. W., plans addition to plant; day labor.

ATLANTA — addition — Bauer Pottery Co., Inc., 1800 Murphy Ave., S. W., plans addition to plant; 1-story; 100x100 ft.; day labor.

ATLANTA — repairs — Barge-Thompson Co., 136 Ellis St., N. E., has contract at \$20,000 for fire damage repairs to building, Spring St. and Baltimore Place, N. W., occupied by E. R. Squibbs & Co.

COBB COUNTY — gunnery building — U. S. Engineers Office, 512 Spring St., N. W., Atlanta, let contract to The Flagler Co., 305 Techwood Drive, N. W., Atlanta, for construction of Gunnery Building, for Marietta Aircraft Assembly Plant.

JAVANNAH — remodel building — Ralph W. Didschuneit, Candler Bldg., Atlanta, has contract at \$75,000 for alterations and additions to Ocean Steamship Co.'s office and warehouse.

Equipment—Defense Plant Corp., announced an increase in its contract with Lombard Iron Works, Augusta, to provide additional equipment for plant in Georgia; cost \$41,000.

KENTUCKY

Equipment—Defense Plant Corp., announced contract with Churchill Distilling Co., Baltimore, Md., to provide equipment for plant in Kentucky at cost of \$20,000.

Equipment—Defense Plant Corp., awarded contract to Athertonville Distillery,

Contracts Awarded

Athertonville, Ky., for equipment for plant in Kentucky.

LOUISIANA

NEW ORLEANS — additions — Boh Brothers Construction Co., 2400 Cypress St., has contract for addition to personnel building, FX-1032(7) and storage room addition, to office annex FX-2023(1) and Busy Electric Co., has contract for installing power feeder for West side framing yard and proposed platens on east yard at shipyard on Florida Avenue and Industrial Canal for Delta Shipbuilding Co.; O. O. Carpenter, plant facilities engineer.

NEW ORLEANS — aircraft plant — Harlan Electric Co., Detroit, Mich., has contract for electrical work in connection with aircraft plant at Michoud near New Orleans, for Higgins Aircraft Corp., Inc.; Albert Kahn Associated Architects & Engineers, Inc., New Center Bldg., Detroit, Mich.

NEW ORLEANS — plant — R. P. Farnsworth & Co., Inc., S. Salsedo St., has contract for addition to Otis-Astoria Corporation's mahogany plant at S. Front St. and Jefferson Ave. for Ichabod T. Williams & Sons; Richard Koch, Archt., 908 Queen & Crescent Bldg.; estimated cost \$44,589.

O P E L O U S A S — dehydration plant — Thomas Bryan & Associates, Rochester, New York, have contract for erection of sweet potato dehydration plant for Dezauche & Son; brick; 338x90 ft.; equipment for plant being manufactured by Cleaver Brooks Co., Milwaukee, Wisc.

MARYLAND

BALTIMORE — ventilation — Fingles Co., 2256 Reisterstown Rd., has contract for ventilation, 3 spray booths, 2122 Broening Highway, for Eastern Aircraft Division of General Motors Corp.

BALTIMORE — addition — Westinghouse Electric & Manufacturing Co., let contract to Consolidated Engineering Co., Inc., 20 E. Franklin St. for addition to manufacturing building, 4015 Foster Ave.; 1-story; fabricated steel.

BALTIMORE — equipment — Defense Plant Corp. authorized contract with Koppers Co., to provide equipment and machinery for plant in Maryland; cost \$450,000.

BALTIMORE — building — Leimbach & Williams, 30 W. Biddle St. has contract for building, 429 E. Cross St. for U. S. Printing & Lithograph Co.; 1-story; concrete block.

BALTIMORE — alterations — W. E. Bickerton Construction Co., 101 W. 22nd St., has contract for alteration and addition to plant at Mount Washington for Maryland Bolt & Nut Co.; cost \$14,800; Crout, Snyder & Crandall, Engrs., 20 E. Lexington St.

BALTIMORE — fuel oil tanks — Western Maryland Railway Co., erect 2 fuel oil tanks of 10,000 gal. capacity at 101-501 E. McComas St.; owner builds.

BALTIMORE — building — Holtite Manufacturing Co., 1221 Warner St., let contract to Talles Construction Co., Garrison Blvd. and Fernhill Ave., for fire damage repairs.

BALTIMORE — storage shed — Davis Construction Co., 9 W. Chase St., has contract for storage shed, 1530 Russell St., for Gross Mechanical Laboratories.

BALTIMORE — alteration — Baltimore Contractors, 15 N. Central Ave., has contract for alteration to plant, 2001 Laurens St., for American Brake Shoe & Foundry Co.; 1-story; brick.

BALTIMORE — water tower — The Marley Co., Kansas City, Kans., has contract for

water tower for Independent Ice Co., 309 N. Holliday St.

CRISFIELD — gas plant — Crisfield Light & Power Co., W. H. Hamill, Mgr., starting work on gas plant to house equipment already in operation.

Plant Facilities—Defense Plant Corp., authorized contract with Maryland Sanitary Manufacturing Co., 4500 E. Lombard St., Baltimore, for additional plant facilities in Maryland; cost \$240,000.

Equipment—Defense Plant Corp., authorized a contract with Koppers Co., Baltimore, for additional equipment for plant in Maryland; cost \$25,000.

MISSISSIPPI

JACKSON — buildings — Ludlow-Martin Steel Co., Inc., H. M. Ludlow, Pres., 826 Commerce St., erect two 1-story buildings at cost of \$30,000; steel; completed in 60 days.

MISSOURI

DUNKLIN COUNTY — pipe and sheet metal work — War Dept. announced award of contract to Mound Rose Cornice & Sheet Metal Works, St. Louis, for pipe and sheet metal work; U. S. Engineer Office, Kansas City, in charge; under \$50,000.

ST. LOUIS — plant — Hammer Dry Plate & Film Co., 3547 Ohio Ave., has building permit for constructing \$85,000 factory building, northwest corner of Miami St. and Ohio Ave.; erect warehouse of rein. conc., 65 x 170 ft. west of present film making structure with general offices in second story, 65 x 90 ft.; a reinforced concrete building, comprising basement, first and second floor, fronting 106 ft. on Miami by 177 ft. on Ohio is also planned; remodel boiler and engine house at northeast corner will be remodeled; structures will be of fireproof construction with interior partitions of glazed tile; facade of brick with stone trim; air conditioned; A. H. Haeseler Building & Contracting Co., 2346 Palm St.; Gen. Contr.; Daniel Dohm, Jr., Archt.

ST. LOUIS — factory — Mines Equipment Co., 4215 Clayton Ave., has permit for 1-story factory at 4235 Clayton Ave.; permit for foundation, which is now in place, was issued earlier; structure will be 100 x 121 ft.; install unit heaters, Woermann Construction Co., 3800 West Pine Blvd., Gen. Contr.

Additional Facilities — Defense Plant Corp. awarded contract to Scullin Steel Co., St. Louis, for additional facilities for plant in Missouri.

Plant Expansion—Defense Plant Corp. announced an increase of \$34,000,000 in its contract with Ford Motor Co., Dearborn, Mich., funds to be used for additional plant facilities in Missouri, Tennessee, Michigan, Ohio and New York.

OKLAHOMA

OKLAHOMA CITY — plant — Austin Co., A. D. Engle, project manager, Oklahoma City, has contract for project to cost in excess of \$5,000,000.

TULSA — warehouse — Engineering Laboratories, has permit for warehouse and shop at 505 E. 4th St.; brick and glass; 100 x 140 ft.

TENNESSEE

CHATTANOOGA — addition — Moccasin Bushing Co., 201 Chestnut St., erect addition to plant; brick; composition roof; wood and concrete floors.

LYLES — commissary — J. B. Regen, 127 Fifth Ave., N., Nashville, has contract at \$13,400 for commissary building for Tennessee Products Corp.; Donald W. Southgate, Archt., Nashville Trust Bldg.; 1-story; 40



x 66 ft.; brick.

MEMPHIS—Sneed Crop Dusting Co., Sterick Bldg.; capital \$10,000; V. O. Sneed.

TEXAS

PORT NECHES—air conditioning plant—Government completed negotiations for purchase of municipal air conditioning system at auditorium at New Orleans, La., for installation in rubber plant operated by Neches Butane Products Co. and B. F. Goodrich Rubber Co.

TROUP—brick plant—General Refractories Co. of Philadelphia, Pa., started work on \$250,000 brick plant; present plans call for conversion of approximately 100 tons of clay into fire brick daily; main building will be 684 x 100 ft.; main tunnel kiln, 500 ft. long and will include a 100 ft. dryer.

Pipe Line—War Emergency Pipeline Corp., Burt E. Hull, General manager, started work on southwestern leg of the 20-in. pipeline to haul petroleum products from Texas to Atlantic Coast refineries; Williams Brothers, National Bank of Tulsa Bldg., Tulsa, Okla., has contract and has started roll welding pipe on south bank of the Arkansas River near Little Rock; this contract includes line in immediate Baytown area and from Red River to White River; other contractors are organizing construction crews for all "spreads" between Baytown and Seymour, Ind.

Pipe Line—War Emergency Pipeline Corp., headquarters in Cincinnati, Ohio, will start work at once on \$4,000,000 emergency war pipe line from southeast Texas refining areas to Seymour, Ind., following award of contracts; two lines will be laid from Texas to Little Rock, Ark., and a 24-in. line on to Seymour; gasoline will be transported from refineries at Houston, Baytown, Beaumont and Port Arthur; following have been awarded contracts for various sections: Sherman and Allen of Houston, Tex., contract for section from Baytown to Beaumont; N. A. Saigh, Builders Exchange Bldg., San Antonio, from Beaumont to Sabine River; Williams Brothers, National Bank of Tulsa Building, Tulsa, Okla., line in immediate Baytown area; Winston Guthrie of Dallas, Tex., contract for link from Sabine River to the Red River; Williams Brothers, Red River to White River; B. & M. Construction Co., Petroleum Building, Oklahoma City, Okla., White River to St. Francis River; Oil States Construction Co., Tulsa Loan Bldg., Tulsa, Okla., St. Francis River to Mississippi River; Swinerton and Walberg of San Francisco, Calif., Mississippi River to Norris City; Midwestern Engineering Co., Tulsa, Okla., Norris City to Patoka; J. C. Truman of El Dorado, Kans., Patoka to Seymour.

VIRGINIA

MARION—furniture plant—Virginia Lincoln Corp., Charles C. Lincoln, Pres., starting work on rebuilding plant, burned last January; has 34-acre site; plant to cover 8 acres; will furnish aircraft parts and other materials; 1-story; fire-resistant construction; saw tooth roof; mechanical ventilation; install cafeteria for employees; town of Marion will construct road to plant.

NORFOLK—shop—Russ Equipment Co., will erect \$14,000 show room and shop at 21st and Llewellyn Ave.; 100 x 100 ft.; brick; Vernon T. Myers, Bankers Trust Bldg., contractor.

RICHMOND—shed—Capitol City Iron Works, P. J. Carverich, 3010 Poplar St., has permit for steel asbestos frame addition; cost \$10,000.

Contracts Proposed

ARKANSAS

JONESBORO—charcoal plant—American Charcoal Co. will operate \$30,000 charcoal plant; Phillip George of Luxora, interested.

LITTLE ROCK—plant—Jackson Cookie Plant, J. C. Jackson, Mgr., 113 S. Olive St., plans rebuilding burned plant.

FLORIDA

JACKSONVILLE—sawmill—S. J. Stubbs Lumber Co., Box 2008 rebuilding burned sawmill; frame; metal roof; owner builds; cost of plant, \$25,000 of equipment, \$15,000.

MIAMI—cold storage warehouse—Blue Ribbon Distributors, Inc., George W. Stewart, Pres., 421 N. W. 32nd St., received bids April 12 for cold storage warehouse, N. E. 25th St. and E. E. C. Railway; 2-story; conc. brick and stucco; 149 x 160 ft.; structural and rein. steel; tar and gravel roof; conc. wood and tile floors; metal vents; cast stone grill work; R. DeC. Weakley, Archt., 1901 Congress Bldg.; following prospective estimators: Deigaard & Preston Bldrs., Inc., 264 Giralda Ave., Coral Gables; Arkin-Prufert Construction Co., 1719 Congress Bldg.; Gunn & Goll, Inc., 69 N. E. 36th St.; Halsema Bros., Inc., 37 N. W. 45th St.

MIAMI—warehouse—Blue Ribbon Distributors, Inc., George W. Stewart, Pres., 421 N. W. 32nd St., received low bid at \$58,108 from Gunn & Goll, Inc., 69 N. E. 36th St., Miami, for cold storage warehouse, N. E. 25th St.; R. DeC. Weakley, Archt., 1901 Congress Bldg.

PENSACOLA—power line—Gulf Power Co., Pensacola, applied to U. S. Engineer Office, Mobile, Ala., for permit to construct an overhead power line providing a minimum clearance of 100 ft. above mean low water over intracoastal waterway, 125 ft. east of Gulf Beach highway, near Gulf Beach.

GEORGIA

COLUMBUS—dehydration plant—E. B. Land, Jack Ellis, John B. Ellis, J. Robert Elliott and L. C. Watkins, authorized by federal government to erect a sweet potato dehydration plant, east of 15th Ave.; investment in equipment, \$150,000; will operate as Southern Dehydrating Co.

COLUMBUS—building—Bradley Manufacturing Co., Tenth Ave. and Wynnton Drive has been absorbed by Eagle & Phoenix Mills.

COLUMBUS—plant—Williams Lumber Co. acquired buildings of Bradley Manufacturing Co., Tenth Ave. and Wynnton Drive.

SAVANNAH—planing mill, etc.—Highsmith Lumber Co., Stiles Ave., will rebuild burned planing mill, warehouse and lumber shed.

KENTUCKY

PIKEVILLE—coal—Heller Coal & Coke Co., W. C. Holtzworth, Youngstown, Ohio, V. P. and Treas., recently incorporated, acquired holdings of Chicago By-Product Corp. in Pike County, embracing 4,000 acres of coal lands on Marrowbone Creek near Heller, 20 miles from Pikeville, and 2,000 rectangular coke ovens having a capacity of 20,000 tons per month.

Plant Facilities—Defense Plant Corp., authorized an increase of \$70,000 in its contract with Corod Minerals Corp., Marion, Ky., to provide plant facilities.

LOUISIANA

GREENWOOD—dehydration plant—Sweet Potato Growers Assn., C. D. Dickson, of Flournoy, Pres., interested in establishment of dehydration plant.

LAFAYETTE—dehydration plant—Little & Co., 612 N. Michigan Ave., Chicago, Ill., will erect sweet potato dehydration plant.

ST. FRANCISVILLE—sawmill—B. W. Peal will rebuild burned saw mill.

MARYLAND

CAMBRIDGE—dehydration plant—Phillips Packing Co., Inc., has company's engineers working out the dehydration installation, in conjunction with the equipment firms supply them.

DUNDALK—balcony—Allied Aviation Corp., Maryland Ave. and Main St., received bids April 3 for balcony; Baltimore Contractors, 15 N. Central Ave.; D. Piracci & Co., 2552 Woodbrook Ave.; E. Eyring & Sons Co., 808 S. Conkling St., all Baltimore, estimating.

MISSISSIPPI

BILOXI—boat ways—Westergard Boat Works construct 5 additional boat building ways; plant will be managed by James Pringle; Connie Collins, Constr. Supt.

VICKSBURG—office—LeTourneau Co. erect office adjoining present factory; 150 x 134 ft.; 1-story; concrete, tile, wood and brick.

MISSOURI

BOONVILLE—mill—Boonville Mills Co., O. F. Kelley, Pres., will rebuild burned milling section.

ST. LOUIS—expansion—Blanton Co. acquired tract containing 110,000 square feet west of company's new manufacturing plant on river front between Angelrod and Buchanan Sts., for future expansion; company recently obtained necessary priorities to erect a soybean crushing plant with initial capacity of 3,000 bu. daily; manufactures vegetable oil products.

NORTH CAROLINA

SHELBY—cannery—Shelby Community Cannery, Dr. S. S. Royster, trustee, plans erection of cannery.

Pipe Line—Allen K. Swann, Evansville, Ind., representing independent oil operators, considering construction of double 12-in. pipe line from Houston, Texas, eastward along the Gulf Coast into Georgia, northward through the Carolinas to Norfolk, Va.; proposed line would enter North Carolina from South Carolina and continue to Virginia, approximately 100 miles inland; line would serve Brunswick, Ga.; Charleston, S. C.; Wilmington, Southport and Morehead City, N. C. and Norfolk by lateral lines or spurs running from main line to coastal points.

OKLAHOMA

CUSHING—gas plant—Midland Cooperative Fuel Co. of Minneapolis, Minn., contracted to purchase Cushing Refining & Gasoline Co. of Cushing.

OKLAHOMA CITY—warehouse—Midwest Steel Co., Norman Bird, Pres., 12 N. Indiana, has plans in progress for rebuilding warehouse, shop and office.

SOUTH CAROLINA

CHARLESTON—pipe line—Southern Pipe Line Co., chartered with \$10,000 capital to construct and operate pipe line for transportation of petroleum and petroleum products; J. B. Mahoney, Pres., T. J. Kenny, Sec.; Treas.

YORK—cold storage—Electric Cooperative Refrigeration Co., Inc., W. H. Wilkerson, received bids April 28 for cold storage building; 1-story; 100 x 56 ft.; brick walls; east stone trim; asbestos shingle roof; J. B. McCrary Engineering Corp., 22 Marietta St. Bldg., Atlanta, Ga.

TENNESSEE

MEMPHIS—plane engine parts—Ford Motor Co. will manufacture Pratt & Whitney airplane engine parts in its Memphis plant; install new machinery; P. A. Boykin in charge of local plant.

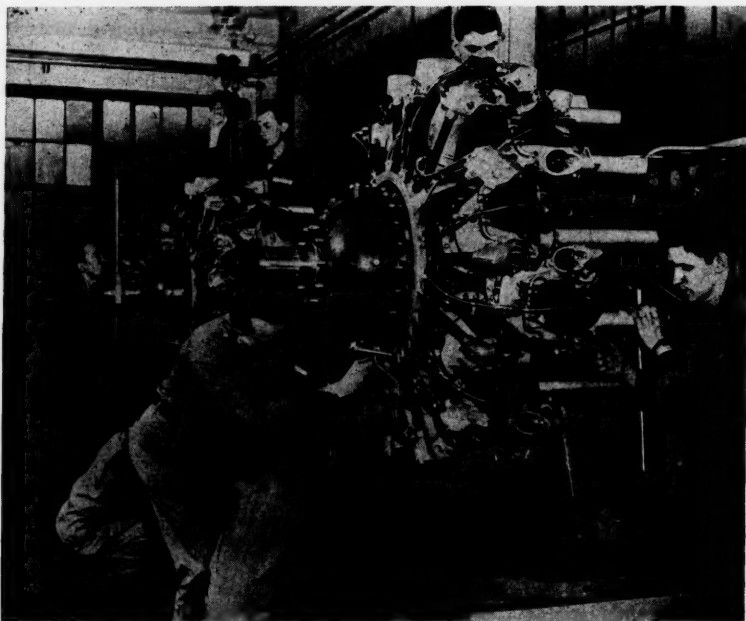
NASHVILLE—warehouse—Tennessee Chemical Co., J. M. Durrett, Plant Supt., plans fire damage repairs to chemical warehouse; cost \$10,000.

TEXAS

CONROE—plant—Columbian Carbon Co. will erect carbon black plant at edge of Conroe oil field, on Santa Fe; residue gas from the Humble gasoline plant and possibly the Midland gasoline plant will be used in processing of rubber; cost in excess of \$500,000; company is completing plant at Fairbanks.

Ice Plants—R. K. Dunbar & Co., Ltd., Brown Bldg., Austin, acquired South Texas Ice Co., operators of ice plants in New Braunfels, Seguin, Floresville, Hondo and Boerne; will be improved and expanded as necessary.





With half a million dollars worth of tools, equipment and live engines on which to test their skills, ground forces of the Army Air Forces rapidly become aviation engine overhaul mechanics in the Buick factory school operated in conjunction with the AAF Technical Training Command. Instruction concentrates on shop practice with 85 per cent of the students' time devoted to tearing down and rebuilding the engines and sub-assemblies. On completion of the course, the student is fitted for maintenance and overhaul work in depots and on the fighting fronts.

New Texas Pipeline Proposed to Middle West

The construction of a large pipeline to provide middle western refineries with additional supplies of West Texas crude oil is now under study by the Petroleum Administration for War.

Pointing out that crude oil reserves in midcontinent fields are declining, the Administrator said:

"As a consequence, middle western refineries will ultimately have to be supplied with crude oil from more distant sources, and the problem may become acute before the end of 1944.

"In the face of that prospect, a pipeline from a central point in the West Texas field—one of the last substantially untapped crude oil reserves presently known in the Southwest—to a point of connection with existing pipelines that serve the middle western refining districts must be given serious consideration.

"The long-range plans of the Petroleum Administration have embraced a study of the possible construction features of such a pipeline. Recently a specific proposal from a private company has been received for the construction of a 16-inch pipeline from near Lubbock, Texas, to the vicinity of Drumright, Oklahoma, to connect with existing pipelines that feed the middle western refining centers.

"The proposed project, with a capacity of from 54,000 to 116,000 barrels per day depending upon the number of

pump stations installed, is receiving careful study."

According to the Deputy Petroleum Administrator, the pipeline proposal calls for the private financing of approximately 383 miles of new pipelines requiring a minimum expenditure of 42,645 tons of steel and approximately \$7,000,000.

South's Merchant Shipyards Completed 49 Vessels in March

American merchant shipyards during March smashed all previous records for ship deliveries with the completion of 146 new vessels, totalling 1,516,000 tons deadweight. March output corresponded to a rate of more than 18,000,000 tons a year. Southern shipyards contributed 49 of the 146.

Of the 146 ships delivered in March, 103 were Liberty ships, 19 were the Commission's long range C-type vessels, 12 were large tankers, 11 were of special types and one was a powerful sea-going tug. In addition, a number of smaller craft, including three harbor tugs were delivered into service.

Southern yards and their deliveries are as follows:

| Shipyard | No. of Vessels | Type of Vessel |
|---|----------------|----------------|
| Alabama Dry Dock & Shipbuilding Co., Mobile, Alabama | 2 | Tankers |
| Avondale Marine Ways, Inc., Westwego, Louisiana | 1 | Sea-going Tug |
| Bethlehem-Fairfield Shipyard, Inc., Baltimore, Maryland | 16 | Liberty |

| | | |
|---|----|-----------|
| Bethlehem-Sparrows Point Shipyard, Inc., Sparrows Point, Maryland | 2 | Tankers |
| Delta Shipbuilding Company, Inc., New Orleans, Louisiana .. | 5 | Liberty |
| Houston Shipbuilding Corporation, Houston, Texas | 5 | Liberty |
| Ingalls Shipbuilding Corporation, Pascagoula, Mississippi ... | 2 | C-3 Cargo |
| J. A. Jones Construction Co., Inc., Panama City, Florida | 1 | Liberty |
| North Carolina Shipbuilding Company, Wilmington, North Carolina | 10 | Liberty |
| Pennsylvania Shipyards, Inc., Beaumont, Texas | 2 | C-1 Cargo |
| Southeastern Shipbuilding Corporation, Savannah, Georgia | 3 | Liberty |

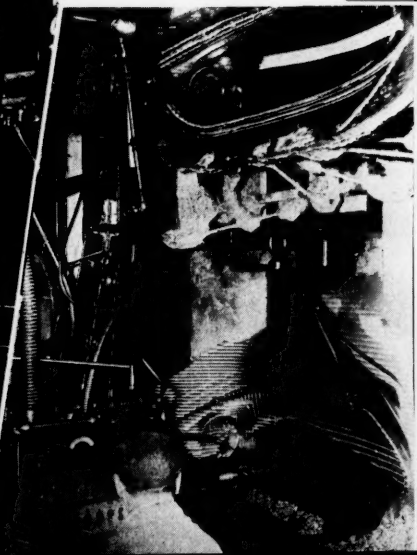
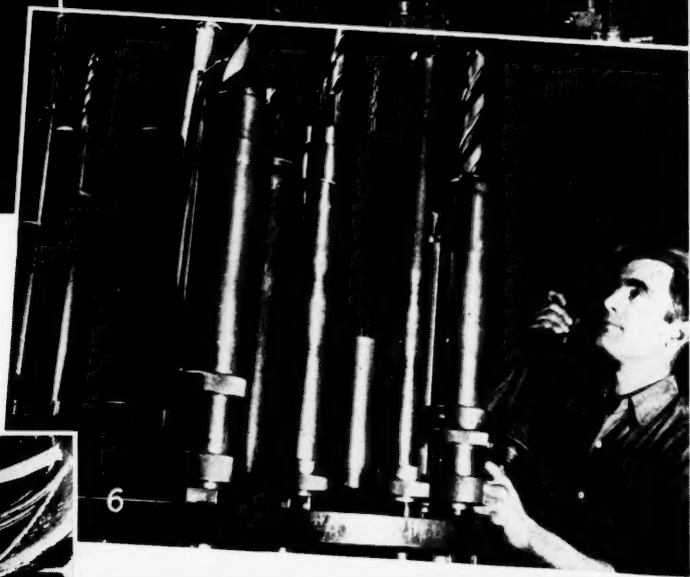
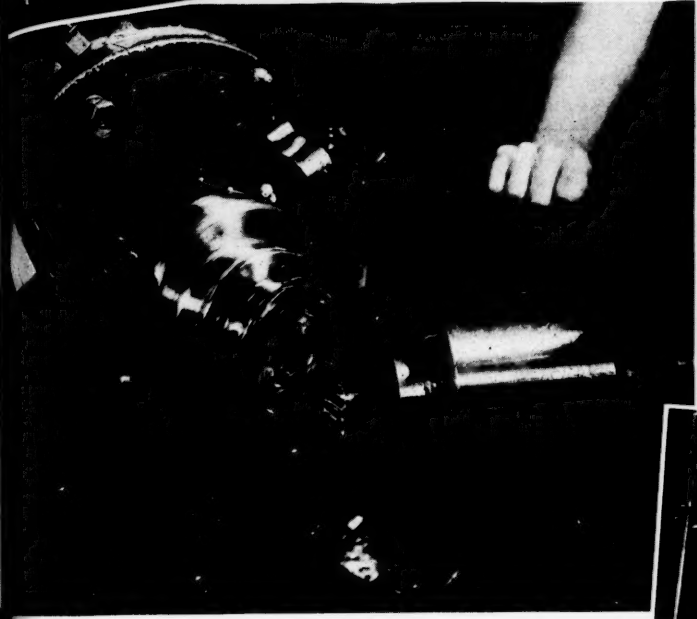
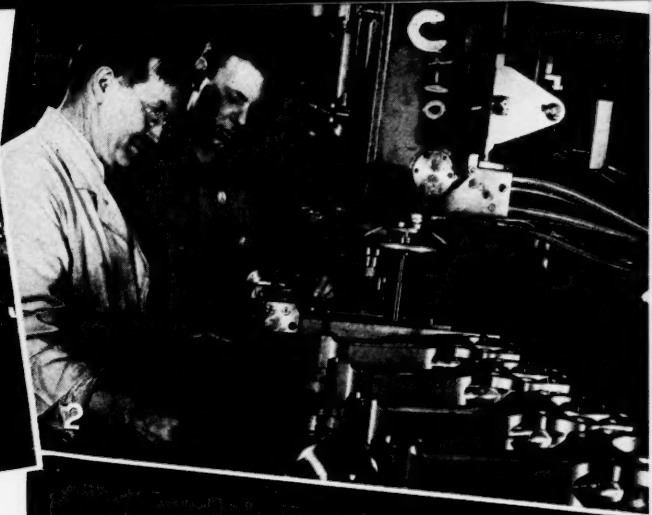
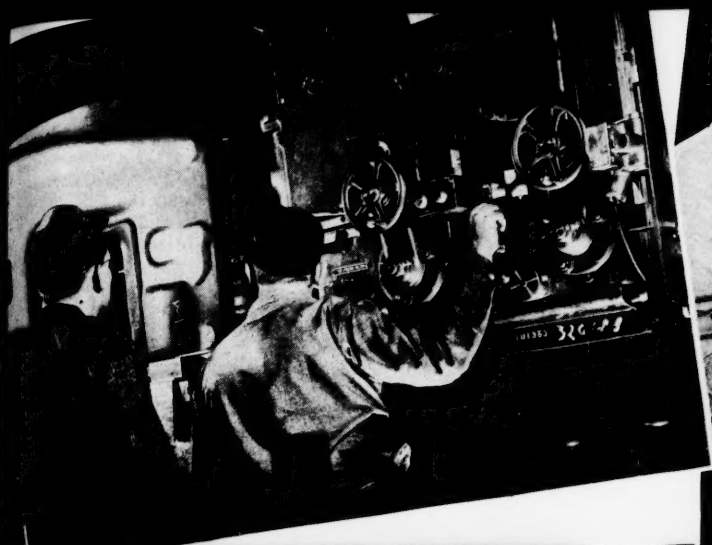
MACHINE TOOL PRODUCTION

Machine tools have been and still are among the most important items in the production of war goods by American industry. But vital as machine tools are to the manufacturers of shells, and airplane parts, engines, etc., they are equally as important to the builders of machine tools themselves. Evidence of what these tools are accomplishing can be seen in the pictures on the opposite page. (1) A special horizontal milling machine is here performing an operation on a column of what will become a knee and column type milling machine. (2) A large "trader-controlled multiple spindle vertical hydraulic milling machine" being tried out on the "runoff line" of a large machine tool plant, for its eventual job of helping to make master connecting rods for radial aircraft engines. Four of the partially completed rods are mounted on the fixtures in the foreground. When in operation, the machine will have fixtures for eight such rods, so that while the completely automatic tracing finger guides the four cutters (extreme background) around one set of four rods, the operator can be unloading and reloading the other four fixtures with new parts to be milled. This machine will probably be the fourth or fifth of a series of perhaps a dozen different sizes and types of machine tools which will each have to perform their operations before these parts become finished connecting rods. (3) It's all a matter of relative angles and turning speeds. Properly set, this gear-cutting machine tool will produce almost any kind of beveled, spur, hypoid, or other kind of gear. The small hypoid bevel gear shown partially out in the center of the picture will soon become part of another machine tool, after it has been heat-treated, ground, lapped, and thoroughly tested and checked. (4) A universal cutter sharpening machine for keeping fit the cutting tools that are used by other machine tools. Here the machine is being carefully inspected in the "runoff" line. (5) Many minds, hands, and skills went into the construction of this large, hydraulically operated milling machine. The slender shaft just below the figure "100" in the upper right is a tracer finger, so called because it "feels" its way gently around the edge of a pattern so that the cutters reproduce the pattern exactly in rough steel. This tracer, so sensitive that it can be deflected with the edge of a piece of cardboard, controls the movement of tons of machinery exerting 15 or 20 horsepower of cutting force.

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(Official OWI Photos)



Designed to prevent blasts in munitions plants, these equipment items are made of synthetic rubber. R. Van Ness and L. E. Best of the United States Rubber Company's development department are seen examining a conductive TNT bucket while beside it are primer cups, carrying box and drying tray.

Manganese Deposits Near Walnut Grove, Alabama

Manganese deposits in the Murphree Valley, near Walnut Grove, Etowah and Blount Counties, Ala., have been examined and mapped by G. W. Stose of the U. S. Geological Survey. The deposits are associated with the Fort Payne chert, of Mississippian age, on the northwest limb of the Murphree Valley anticline. The ore consists mainly of soft pulverulent pyrolusite in chert and clay that are residual from the weathering of the Fort Payne chert. It has been concentrated by circulating ground water on low terraces on the northwest slope of Red Mountain. Almost 14,000 tons of ore, containing from 25 to 51 per cent of manganese, has been marketed from the area.

The geology and structure of the rocks of the area have been briefly described in a report containing a map and structure sections which has been placed in open file at the offices of the Geological Survey in Washington, D. C., where they may be consulted by anyone directly interested in the deposits.

American Iron & Steel Institute Meeting

The American Iron and Steel Institute will hold its 52nd general meeting at the Waldorf-Astoria Hotel, New York, on May 27, 1943. Because of the war, the usual banquet will be omitted and attendance at all sessions will be restricted to individual members of the Institute. Speakers at the general session will be President Walter S. Tower, Vice Admiral S. M. Robinson and Major General L. H. Campbell, Jr. In the afternoon will be held a technical session of three discussions concerning the steel industry's contribution to the war effort, and an industrial relations session.

Coal-Oil Fuel Tests Underway

Exhaustive tests to develop a fuel composed of a mixture of oil and coal, for years the goal of research chemists and engineers, have been started by the U. S. Bureau of Mines and The Atlantic Refining Company in an industrial boiler of the company at its Philadelphia refinery.

If the tests prove successful in developing a colloidal fuel for industrial furnaces, heating plants, and power generators, the amount of oil needed by this type of equipment will be reduced by about one-third and will be an important factor toward alleviating the serious petroleum shortage along the Atlantic seaboard. It is expected that the tests will be concluded within a month. If successful, the coal-oil fuel probably can readily be adapted to existing boiler equipment in industrial plants and with no loss in plant efficiency.

Although colloidal fuel probably could not be burned in domestic heating furnaces, its use by heavy industry would undoubtedly result in diverting a large quantity of fuel oil to other industries now seriously affected by the shortage. In addition, its general use in the future would open a new and steady market for the distribution of bituminous coal.

The mixtures used in the experiment contain approximately 60 per cent oil and 40 per cent bituminous coal pulverized into powdered form in grinding machines. The type of coal used has a relatively low ash content. The greatest problem is to establish a mixture which will prevent the settling of coal particles and a consequent separation of oil and coal components.

The tests now under way are designed to determine, among other things, the various types of boilers and furnaces in

which the colloidal fuel may be used taking into consideration the combustion space, the size of the passages, the amount of ash in the coal, the fusion temperature of the ash, and the best methods of removing ash from the boilers and furnaces.

Huge Railroad Expansion Completed at Roanoke

(Continued from page 35)

garages. New floodlighting equipment was installed throughout the engine terminal and yards, permitting ease of operation even at night and promoting the safety of workers.

By these additions and improvements, and without any increases in the basic engine terminal facilities such as coaling station, water supply plant, turntable, or roundhouse (except for the lengthening of 16 stalls), an engine terminal originally planned for handling a maximum of 80 locomotives per 24-hour period is now handling comfortably and with better service 135 locomotives per 24-hour period, with a maximum capacity still greater.

The expansion program was carried out under the general direction of W. P. Wiltsee, chief engineer, and A. B. Stone, assistant chief engineer, and under the direct supervision, during its initial stages, of the late O. V. Parsons, assistant engineer, who was succeeded by W. H. Bettis. Mr. Bettis later was transferred and was succeeded by H. F. Smith. J. P. Maloney, resident engineer, was in direct charge of the field work, and J. A. Beoddy, superintendent of Telegraph and Signals, supervised the design and installation of signals and communications. The car retarders, the power switch mechanisms, their control apparatus, the engine communication system and the signal systems were furnished by the Union Switch and Signal Co., Swissvale, Pa., and installed by that firm. Except for certain minor items, the grading work was done by the Ralph E. Mills Construction Co., Frankfort, Ky., and contractors M. S. Hudgins, B. F. Parrott & Co., J. P. Pettyjohn Co., and Martin Bros., performed work involving layout construction and the various new buildings.

2500 Acres of Industrial and Terminal Lands

Available for Manufacturing Plants

Located at Port Wentworth (Savannah, Ga.) we are prepared to serve those who are considering expansion for the present war effort or for the days of peace to come. This area is served by our Affiliate, The Savannah & Atlanta Rwy. Co.

PRE-WAR

These industries, all of them good neighbors, all served by our railway, chose to locate their plants in this area:

**American Steel & Wire Company
Atlantic Creosoting Company
Certain-teed Products Corporation
Dixie Asphalt Products Corporation
Hercules Powder Company**

**National Gypsum Company
Pan American Petroleum & Transport Co.
Savannah Sugar Refining Corporation
Savannah River Lumber Corporation
Union Bag & Paper Corporation**

PRESENT

War time developments include:

**MacEvoy Shipbuilding Corporation
Chatham Airport (U. S. Army)
United States Quartermaster's Depot
F.H.A. Housing Development—155 houses
F.P.H.A. Housing Development—825 Units.**

POST WAR

The marvelous new products emerging from the laboratories of chemists and engineers during the war period can be produced to advantage in post war plants and factories that will be located in this attractive community. You, too, can obtain the same economic advantages, the elbow-room, happiness for employees, and the success attained by others, who for over a quarter century have produced or shipped millions of tons into and out of the Port Wentworth area.

PORT WENTWORTH CORPORATION

New York—17 E. 42nd St.

Savannah—Box 1094

Government Payrolls Now Exceed Those In Manufacturing in 1939

Salaries and wages paid to all government employees, including federal, state and local units and the armed services, in 1942 slightly exceeded in the aggregate the combined salaries and wages paid in all manufacturing in 1939, according to the Division of Industrial Economics of The National Industrial Conference Board.

The Board estimates the sums so paid to government employees in 1942 at \$13.5 billion exclusive of subsistence supplied members of the armed forces.

The number of persons on the payrolls of government at the beginning of February is estimated by the Board at 13.5 million. "On this basis," says the Board, "about one of every four individuals employed in February derived his livelihood from government sources."

The total number of federal civilian employees is about the equivalent of all wage earners engaged in the construction of aircraft, ships, and other transportation equipment including those engaged in the automotive industries. Federal civilian payrolls are currently running at an annual rate in excess of \$6 billion, it adds.

Nearly three million persons were reported engaged in civilian activities of the Federal Government at the beginning of February. The War and Navy Departments together reported 1,865,000 on their civilian payrolls, an increase of nearly 1.5 million in the past two years, and of almost a million since Pearl Harbor.

Synthetic Rubber Tire From Southern Materials

Completion of the first synthetic rubber tire to be made entirely of government-produced materials was announced recently by the Goodyear Tire & Rubber Company.

The historic tire was in the size for U. S. Army "jeeps." Its only difference from a conventional natural or synthetic rubber tire is the date molded into both sidewalls.

Styrene for the rubber was in the first carload to leave a government-owned plant in Texas City, Texas, which, in turn, was the first government styrene plant to go into production. This plant is being operated for the government by the Monsanto Chemical Co.

Butadiene for the rubber was from the first carload to leave the government-erected butadiene plant in Institute, West Virginia, likewise the first government butadiene plant to go into production anywhere in the country. This plant is being operated for the government by the Carbide and Carbon Chemical Company.

Petroleum and Natural Gas in the South

(Continued from page 33)

fining capacity of South-Southwestern states:

Crude Oil Production in Southern States and Value per Barrel

| | Barrels 1942 | Dollar Average per Barrel (1941) | Refining Daily Capacity 1941 |
|----------------|--------------|----------------------------------|------------------------------|
| Texas | 483,371,000 | \$1.12 | 1,352,550 |
| Oklahoma .. | 140,690,000 | 1.13 | 210,280 |
| Louisiana .. | 115,726,000 | 1.14 | 197,500 |
| Mississippi .. | 28,833,000 | 0.91 | 2,500 |
| Arkansas .. | 26,628,000 | 0.93 | 39,750 |
| Kentucky .. | 4,472,000 | 1.30 | 45,450 |
| West Va. ... | 3,574,000 | 2.15 | 2,000 |
| Virginia .. | ... | ... | 11,700 |
| Alabama .. | ... | ... | 4,000 |
| Georgia .. | ... | ... | 4,000 |
| Maryland .. | ... | ... | 42,500 |
| S. Carolina .. | ... | ... | 6,000 |
| Tennessee .. | ... | ... | 4,000 |

Development of this great South-Southwestern chemical arsenal based upon natural gas and petroleum has entailed heavy investments. In 1942 over a billion dollars was spent for the construction and expansion of chemical plants involved in the war effort. These plants were built to process raw materials derived largely from petroleum.

Approximately twenty-five years ago large companies realized that a great chemical industry could be built around petroleum and natural gas as raw materials. One of the first companies to take advan-

and ethyl alcohol. The availability of natural gas and petroleum products made it possible to produce many chemical compounds on a commercial scale that were previously laboratory curiosities, and many new plants have been erected for the manufacture of these products due to their demand for the war effort.

Propane and butane from natural gas and petroleum are the basis for many chemical derivatives, since they are converted into highly active hydrocarbons, which can be readily converted into such compounds as ethyl alcohol, styrene, butadiene, and synthetic rubber. Butadiene is a key hydrocarbon which is now being produced from ethyl alcohol from grain in the rubber program. Also there are plants producing styrene by the dehydrogenation of ethylbenzene. The styrene and butadiene are then co-polymerized into synthetic rubber.

Government butadiene plants now under contract including purification equipment, are as follows:

Thermal Cracking of Mixed Petroleum Hydrocarbons

| | Est. Capacity short tons of Butadiene |
|---|---------------------------------------|
| Atlas Refining Corporation, Shreveport, La. | 10,000 |
| Standard Oil Co. of Louisiana, Baton Rouge, La. | 8,300 |
| Carbide & Carbon Chemicals Corp., Charleston, W. Va. | 5,000 |

Catalytic Dehydrogenation of Butylene and Mixed Butylene and Butane

| | |
|---|---------|
| Humble Oil & Refining Co., Baytown, Texas | 30,000 |
| Standard Oil Co. of Louisiana, Baton Rouge, La. | 15,000 |
| Neches Butane Products Co. (2 plants), Port Neches, Texas | 100,000 |
| Sinclair Rubber, Inc., Houston, Texas | 50,000 |
| Cities Service Refining Co., Lake Charles, La. | 55,000 |

Catalytic Dehydrogenation of Butane

| | |
|---|--------|
| Phillips Petroleum Co., Borger, Texas | 45,000 |
| From Alcohol by Carbide Process | |
| Carbide and Carbon Chemicals Corp. (3 plants), Louisville, Ky. | 60,000 |
| Carbide and Carbon (4 plants), Institute, W. Va. | 80,000 |

tage of these resources was the Carbide and Carbon Chemicals Corporation who organized their first plant at Charleston, West Virginia, to manufacture alcohols and other solvents from cracked gases. The ethyl alcohol produced from natural gas became highly competitive with the ethyl alcohol from molasses or grain. Alcohols, ketones, glycols, organic acids, acetic anhydride, have all been produced from the petroleum and natural gas resources of the South. The success of the research combined with commercialization was able to meet the growing need for such products as ethleneglycol,

But great as the production of natural gas and crude oil have been in the South and Southwest, there can be no doubt that far greater quantities will be produced and used in the years to come. Based upon these raw materials a vast industrial empire encompassing many products will grow. One might say that this war, although devastating in its effect, is not a total loss. Processes have been developed and others are in the making that will be of vast importance in the peace to come. The South and Southwest will play a far greater role in this progress than ever before.

HIGHWAY OF NATURAL GAS FROM FIELD TO INDUSTRY



... THE PIPE LINE

HOUSTON PIPE LINE COMPANY has prepared itself for years for just such natural gas demand as exists today on the Texas Gulf Coast. Its far-flung pipe line system is strategically located across the length and breadth of the Texas Gulf Coast, serving countless new industries that have sprung up in recent years. This ability to serve these important industries without delay, due to long-range planning, is an important phase of this region's war production achievements.

After the locating of a prospective gas well, the drilling of it, and the processing and controlling that must take place, natural gas still must be transmitted to industrial centers. This all-important fourth step is the function of the pipe line, that highway of natural gas from gas field to the fires of industry. Today's modern ditching machines prepare in a day what once took weeks for "muckers" to do with pick and shovel. Today's modern welded steel mains are a vast improvement over the old-time pipe lines with countless joints and connections. Modern welded mains permit the transmission of more gas at higher pressures, an important feature as the demand for natural gas has grown to astronomical proportions here on the Texas Gulf Coast.

Houston Pipe Line Company's ability to serve is backed by its dependable supply of natural gas from many Gulf Coast fields, by trained

personnel, modern equipment, financial stability, and by an eighteen-year record of unfailing service. Its Research Department is in a position to furnish facts and figures about this region's many advantages and resources to those firms even now looking ahead to the post-war expansion that is inevitable in this rich and rapidly expanding Texas Gulf Coast country. For this information, address your request to Research Department, Houston Pipe Line Company, Petroleum Building, Houston, Texas.

For Victory Buy

United States War Savings Bonds

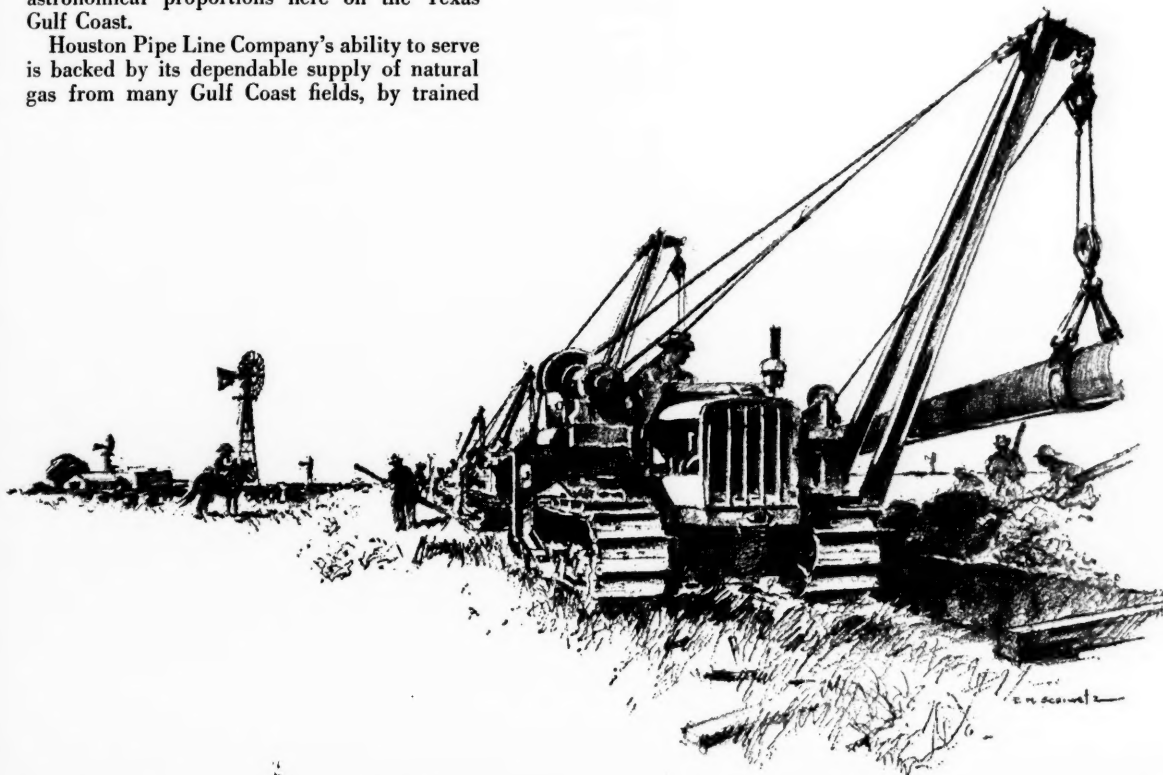
HOUSTON PIPE LINE CO.

Subsidiary of Houston Oil Company of Texas

CEO. A. HILL, JR., President

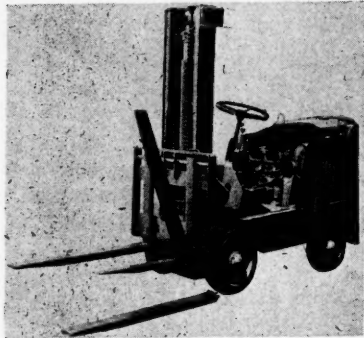
Wholesalers of

Natural GAS



Fork Extension Increases Lift Truck Load Range

The problem of handling loads of widely varying dimensions on a lift truck with standard length forks has been considerably simplified by new fork extension adaptors developed by Towmotor Corporation, Cleveland. Quickly and easily attached, the adaptors make it possible to extend fork lengths safely as much as

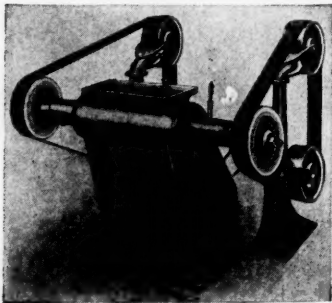


24" in only 15 or 20 seconds. Thus skids or pallets need not conform to a minimum size range to be efficiently accommodated by the same lift truck.

To attach, the adaptors are held vertically, the eye at the bottom of each is inserted over forks. The adapter is then slid back to the bend of the forks, and lowered. It automatically "locks" in position to prevent forward or backward sliding, while side flanges prevent any sideways slipping.

Jones Announces New Abrasive Belt Backstand Idler

A new Abrasive Belt Backstand Idler No. 120 has been developed by Jones Engineering Co., Ellwood City, Pa. The new unit, a floor-type model designed for crowded grinding and polishing departments, can be quickly and easily connected to any regular grinding or polishing lathe. Features of this unit include conveniently located controls, adjustable spring belt tightening and positive screw belt aligning. The Backstand will take any belt size up to 6" wide, is designed



for belt speeds up to 10,000 surface feet per minute, and is so built that simple dust collecting hoods can easily be installed.

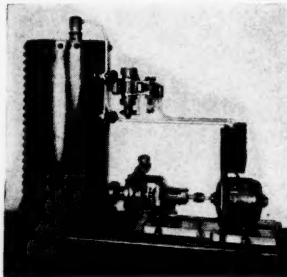
Conversion of regular lathes to belt grinding with the Jones Backstand, using factory-coated abrasive belts and patented Segment-Face contact wheels, results in faster, better, easier and more uniform grinding. Factory-coated abrasive belts will increase production, cutting very greatly the time required for grinding and polishing operations.

New Methods and Equipment

Johnson Expands Line of Boiler Feed Systems

The Johnson Corp., Three Rivers, Mich., announce expansion of their line of High Temperature Boiler Feed Systems. All sizes are now available with either a standard coupled type of pump, or the close coupled type originally furnished. In addition, a new larger size of the pumping unit has been developed, making the System available now for use with boilers from 30 hp. to 500 hp., operating at pressures up to 150 lbs.

The new unit, like the original close coupled type, employs the Johnson "Pressure Equalizing" principle of operation. Instead of fighting against boiler pressure, the Johnson System admits this pressure to an equalizing chamber behind



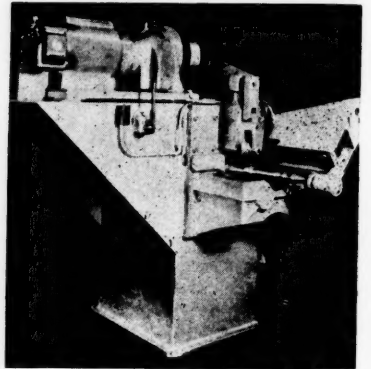
the pump during operating cycles, which leaves only the task of raising the returned condensate a few feet to the boiler water level. This simple short cut, it is claimed, saves as much as 60% in power pumping cost, and permits the use of a low speed, low pressure centrifugal pump. Savings in fuel are obtained by venting the equalizing chamber of the pump unit to the condensate receiver. This makes it possible to maintain a slight controlled pressure on the returns. Condensate, consequently, can be returned to the boiler at far higher temperatures than is possible under atmospheric pressure or vacuum conditions.

New Shell Cropper

A "shell trimmer" that saves much labor-time, shipping charges and scrap handling, has been placed on the market by The Yoder Company, Cleveland, Ohio. It was developed in collaboration with the Dresser Manufacturing Company of Bradford, Pa., who make shell forgings. The shell is cropped at forging temperature and the machine set in the forge line immediately following the final sizing operation. By means of a simple adjustment shell forgings ranging in size from the 60 mm trench mortar through the 155 mm high explosive shell can be cropped. A production of 270 cuts per hour on the 105 mm shell can be realized. Since it is possible to hold the bottom of the shell forging cavity firmly against the end of the gauging mandrel all during the cutting operation, the length can be held to close tolerances. This eliminates the

cutting off and facing operation heretofore necessary in the machining line.

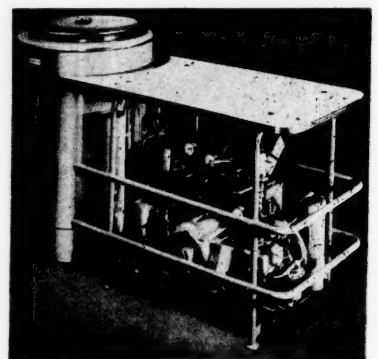
The machine is nearly automatic in operation, the hot forging being slid from the conveyor over the mandrel. First an air operated arm to hold the shell against the locating mandrel swings into position. This mandrel locating from the cavity bottom gauges the shell length. While



in this position the forging is rotated by two driven rolls that support it. The disc type cutter is now fed automatically through the forging well. A roll located on the mandrel prevents the formation of an internal burr. On completion of cut, the operator ejects the forging along with the cropped end by actuating an air operated ejector.

New Industrial Chilling Unit

A new Deepfreeze industrial chilling unit recently has been brought out by Motor Products Corporation, North Chicago, Ill. Known as Model D-70, the new Deepfreeze 2-stage industrial chilling unit provides a wide range of sub-zero temperatures: has a maximum capacity of -70° F. and removes 800 B.T.U. per hour at that temperature. The D-70's chilling chamber consists of a double wall cold cylinder with an interior diameter of 18 ins. and depth of 30 ins. Ample sturdiness is imparted by the inside wall's 10 gauge steel construction. Although it



gives over 24 sq. ft. of primary freezing surface and a capacity of 33 gallons, it measures only 37 ins. high, 67 ins. long, and 36 ins. wide. Unusually efficient insulation and a three-quarter horsepower 110-220 volt motor (equipped with built-in thermal overload) make for low operating costs. Other features include two compressors with refrigerated heads, a temperature control adjustable from atmospheric temperature to 70° below zero, a specially designed expansion valve which is electrically controlled, and a dehydrator charged with silica gel.

INDUSTRIAL SURVEYS

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FOR MANY YEARS we have helped industry by furnishing reliable surveys on industrial locations in the Seaboard Southeast.

MORE RECENTLY we have likewise assisted numerous Government agencies by supplying authentic reports on various parts of our territory.

OUR PRIME OBJECTIVE:—To contribute to our Country's war effort in every possible way until victory is won.

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Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY

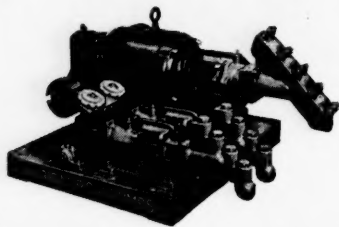
Watts Building

Birmingham, Ala.

Special Pump Handles Three Liquids

The special-purpose Milton Roy Step-Valve Pump was developed for use in a war process which cannot be discussed. This pump delivers three liquids—one heavy, viscous material and two very light materials, at various required rates of flow to accurately control the volume of each in a compounding operation.

Features of the pump include three Milton Roy Step-Valves, one with a single cover-plate. All valves have non-clogging, self-cleaning double ball-checks on both inlet and discharge sides. These are



standard type units, with plungers driven by a single motor, variable plunger stroke while operating, all assembled on a special welded steel base.

The manufacturer, Milton Roy Pumps, 1353 E. Mermaid Ave., Philadelphia, states that these standard pumps handle practically all processing chemicals, petroleum products, intermediates, food and other slurries as well as fibres and solids in suspension, etc., and that specially-designed pumps should be resorted to only on those rare occasions when, for some particular reason, their greater cost is justified.

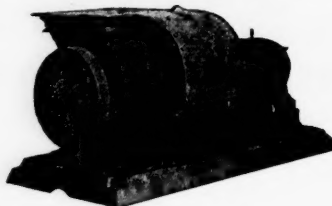
New Boric Acid Fuse

For outdoor power systems a new weather-protected intermediate duty boric acid fuse which interrupts the circuit to the faulted equipment, and isolates the fault from the feeders with a complete 180° air break is announced by Westinghouse Electric and Manufacturing Company. In the new fuse the blown fuse

unit is dropped out of the circuit after the fault current is interrupted. Thus there is no possibility of burning contacts or arcing between fuse tube and clips, or of any carbonized fuse parts breaking down to produce leakage or a second fault. Other features are the "de-ion" boric acid arc quenching action and the sleetproof ejector mechanism for all-weather operation. This DBA-1 fuse is available in voltage ratings from 7.5 kv. through 69 kv. It is applicable in utility and industrial high-voltage power systems for protecting power transformers, feeder-circuit sectionalizing, distribution transformers, high voltage capacitors, and potential transformers.

An Improved Coal Crusher

The American Ring Crusher Type "S" was designed to improve boiler-room operation through delivery to the grate of uniform size coal. In the average moderate-sized industrial plant where the preparation of coal has been haphazard, it has been determined that the use of such a coal crusher as this will increase operating efficiencies from 2½ to 8 per cent while in larger plants the over-all efficiency may be raised as much as 3 per



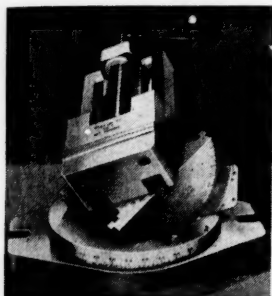
cent by the reduction of ashpit and excess air losses. This improved crusher has housings of heavy steel castings, reinforced with ribs making them unbreakable by any crushing strain. Other features are anti-friction bearings, adjustable grinding plate, metal trap, manganese crushing parts and American Ring Rotor with shredder rings. Manufactured by the American Pulverizer Co., 1149 Macklind Ave., St. Louis, Mo.

Precision Vise and Angle-Plate

A precision machine tool vice which may be mounted on any machine tool for any angle machining operations is announced by the Wesson Co., Detroit, Mich. It is claimed that the vise permits production of even the most complicated

planing, shaping, die-sinking, and other machining operations involving any type of angle, with tool room accuracy at high production speeds.

Mounted by T-bolts to any type of machine, it is completely portable and may be moved from one machine to another



compound angles quickly, easily and with positive precision.

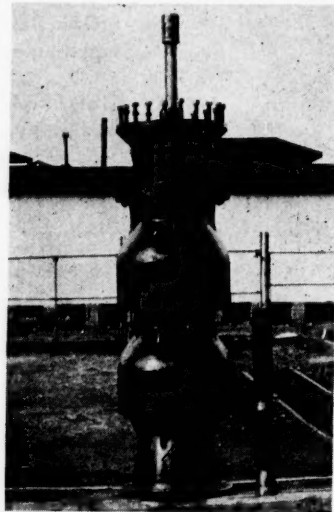
The Wesson Universal Vise reduces set-up and tool-up time to a minimum and permits angle milling, drilling, grinding, boring, reaming, slotting, buffing, tapping, honing, spot facing, counter-boring, lapping, super finishing, grooving,

without disturbing the angle or removing the work. Made in two sizes, the vise swings through 180° in the top plane, 90° in the vertical plane, and 360° in the bottom plane, and is completely graduated in all planes. Vernier graduations, for use where extreme precision is required, also are available.

High Capacity Vertical Turbine Pump Bowls

Layne & Bowler, Inc., Memphis, Tennessee, has designed and developed a line of high capacity vertical turbine pump bowls. Intended primarily for pumping water from flowing streams or lakes for war plants, they may be used in large diameter wells for industrial or municipal water supplies.

The Memphis factory recently has fabricated five complete pumping units for a synthetic rubber plant. These units are equipped with the new two-stage 30" Type SKHC Bowls, designed to deliver 11,000 gallons per minute against a total dynamic head of 169-feet and are driven



by 500 horsepower, vertical, hollow shaft motors. They will be installed in a large diameter caisson and pump water from a flowing stream.

This new line of high-capacity, large diameter bowls includes designs for capacities up to 16,000 gallons per minute, and all bowls are true turbine type. Noteworthy features are the unusually high efficiencies throughout a wide capacity range and the non-overloading type impellers used. These features make the new bowls especially desirable for pumping from rivers or streams where fluctuating water levels are encountered, with consequent variation in capacities and pumping heads.

Asbestos Cement Conduit With New Flexible Coupling

A new asbestos cement conduit, intended principally for cable installation, is being produced by The Philip Carey Mfg. Co., Lockland, Cincinnati, Ohio. A feature of the conduit is the "Flexcaulk" coupling, made for and supplied with the conduit.

This coupling consists of a tubular housing of tough, rigid, blow-resisting asbestos-cement, to which is bonded a liner of time-resisting mineralized asphalt compound, formed into a barrier-type, tapered liner. It permits a flexible, self-aligning, water-tight joint of exceptional quality, when properly assembled with a special, joint-sealing compound.

The asbestos cement conduit itself is said to be exceptionally tough, hard and dense; stronger and more blow-resistant. It is made in two thicknesses, for installation with or without concrete encasement.

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HORIZONTAL



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easy-to-control POWER for more than forty years. That's why you'll find Davenport Locomotives in high favor all over the world—and, right now, delivering distinguished service for the United Nations on many fronts.

As you plan for the future you will do well to enlist the services of Better-Built Davenports to assure a longer life of dependable, low-cost, trouble-free performance. Sizes and types for all industries.

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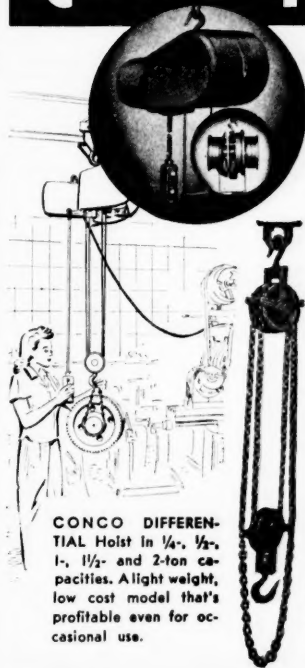
DAVENPORT LOCOMOTIVE WORKS

A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

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Meeting Your Needs Today!

Several construction features adapt the Conco Torpedo Electric Hoist to women operators in your plant: Push button control, for easy, one-hand operation; Double drum construction for perfect load balance; Electric brake; Positive limit switch. Available in 250-, 500- and 1000-lb. capacities. Write us for our outstanding delivery and full information.



CONCO DIFFERENTIAL Hoist in 1/4-, 1/2-, 1-, 1 1/2- and 2-ton capacities. A light weight, low cost model that's profitable even for occasional use.

CONCO SPUR GEAR HOIST. Fast, powerful, in capacities from 1/4-ton through 20-tons. A top quality hoist with many outstanding construction features.

CONCO ENGINEERING WORKS

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Division of H. D. Conkey & Co.,

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PATTERN SHOP
MACHINERY
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PRODUCTION
CHAIN

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STRENGTHEN
IT
WITH
HIGH GRADE
WOODWORKING
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MACHINE SHOP

Industrial News

Two Hundred Percent Production Increase

A 200 per cent production increase since Jan. 1 in the West Coast plant of the Irving Subway Grating Co. in Oakland, Calif., turning out "pocket airfields"—emergency airplane landing mats for the U. S. air forces—was announced recently by C. H. Lewis, vice-president and general manager, recently returned from an inspection trip there.

Although production is well ahead of schedule promised Army authorities, it is expected that another 25 per cent increase will be registered within the next six weeks. The plant was opened last December to facilitate shipment of the steel grating mats to Alaska and the Pacific area.

August T. Sebelien

The death of August T. Sebelien on April 6, 1943, has been announced with profound regret by the Davenport-Besler Corporation. Mr. Sebelien was both secretary and treasurer of the Company.

Formation of Cement Tile Corp.

The Cement Tile Corporation has been formed with offices at 608 South Dearborn Street, Chicago, Ill., to manufacture and install precast concrete roof and floor slabs. Already in active production, the company is prepared to furnish all types of slabs formerly manufactured by Federal-American Cement Tile Co., for application on steel, wood or concrete supports for industrial, institutional and other types of public buildings. Officers of the company are: C. S. Freund, president; L. J. Wilhartz, vice-president; A. Isherwood, secretary and sales manager; J. E. Baird, treasurer and chief engineer; and O. R. Fritchett, assistant secretary and plant manager.

Armco Personnel Changes

The American Rolling Mill Company announces the appointment of Charles E. Stutenroth as assistant manager of the company's Fabricating Division. Mr. Stutenroth succeeds R. S. Gruver who has been appointed manager of Armco's Ashland, Ky., division.

Dr. Spencer-Strong, Pemco Research Director

The Porcelain Enamel and Manufacturing Company of Baltimore, Md., announces the appointment of Dr. George H. Spencer-Strong as Director of Research. Dr. Spencer-Strong succeeds Mr. Lyman C. Athey, who resigned recently to accept the position of Vice-President of the International Products Corporation.

Large Calandrias Completed

The Swanson Evaporator Company, Division of Whiting Corporation, Harvey, Illinois has recently completed a series of eight, 11'-6" diameter Calandria Evaporators. Below each calandria is a conical section which supports a long propeller shaft and a three-bladed, sixty-inch propeller. This propeller fits into the large central downtake of the calandria and is used to force the circulation of the liquor through the tubes.

When completed these units will be part of an installation of quadruple-effect evaporators for salting conditions and will be used in one of the country's major producers of heavy chemicals.

Florida East Coast Railway Annual Report

The freight traffic of the Florida East Coast Railway, shown by the company's annual report for 1942, was nearly double that of the year before. Tonnage was 3,464,000 compared with 1,822,000 in 1941. Passenger travel yielded \$8,000,000 in 1942, compared with \$4,543,000 in 1941. Total railway operating revenues were \$20,838,000 last year, compared with \$11,490,000 the year before.

Bemis Bro. Bag Co. to Relocate at Mobile

To meet expanding war needs for packaging in the South, the Bemis Bro. Bag Co. is increasing its production of multiwall bags in that section by relocating at Mobile, Alabama, existing equipment to produce sewn and pasted, valve and open-mouth, multiwall paper bags. This move will result in the saving of transportation facilities so needed for the war effort. Operations will start within a few

weeks in a plant adjacent to the paper mill of the Hollingsworth & Whitney Co.

The Bemis Mobile plant will serve the entire southern territory stretching along the Atlantic seaboard to include North Carolina and west through Texas. Mr. C. E. Hayward, who has had long experience in the manufacture of bags and who has been with the Bemis Company for 18 years, will manage the plant. Mr. Shelby W. Brown, who for many years has traveled the southern territory as a representative of the Bemis factory at New Orleans will be the sales manager.

Link-Belt Elects Frank O'Neil Vice-President

Link-Belt Company announces the elevation of Frank S. O'Neil, general manager of the company's Indianapolis operations, to the position of vice-president.

Mr. O'Neil joined the Link-Belt organization at the company's Pershing Road plant in Chicago, where he worked in the foundry, machine shop, cost department, and rate setting and production departments. In Indianapolis, he served as asst. supt. in charge of malleable iron chain assembly, supt. of the Ewart plant, asst. general manager of both Ewart and Dodge plants, and as general manager since 1939. His headquarters will continue to be 220 S. Belmont Ave., Indianapolis.

Vice-president James S. Watson, Indianapolis, who has just completed 50 years of service, plans to retire at the end of this year from active duty. He continues as a director of the company.

International Machine Tool Corp. Elects Officers

At a meeting of the directors of the International Machine Tool Corporation, the following officers were elected:

C. Russell Feldmann, President and Chairman of Board.

Warren J. Hannum, Vice-President.

Charles H. Foster, Vice-President in Charge of Sales.

John Hancock, Treasurer.

H. E. Hamilton, Secretary and Assistant Treasurer.

R. L. Dillon, Comptroller and Assistant Secretary.

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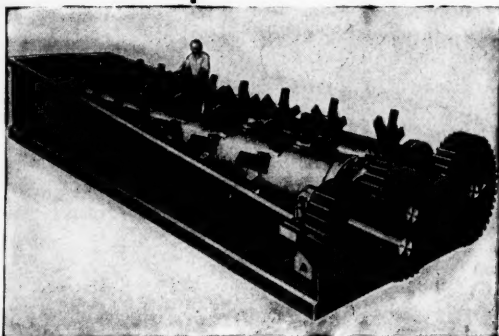
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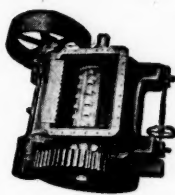
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NEWPORT NEWS, VIRGINIA

Trade Literature

CUTTING EDGES—

Booklet—"Grits and Grinds," volume 34, No. 3, devoted almost entirely to a fully illustrated discussion of the comparable results in ordinary resharpening the cutting edges of high surface finish tools. Norton Company, Worcester, Mass.

CONTROL INSTRUMENTS—

Folder—"Wheelco Comments," volume 2, No. 5, features with illustrations the use of Wheelco control instruments as a means of providing product uniformity in aluminum castings; also gives information as to the care of instruments against corrosion hazards, excessive moisture and temperature, dirt, vibration, etc. Wheelco Instruments Co., Harrison and Peoria Sta., Chicago, Ill.

WIRE ROPE CLIPS—

Booklet—"The Crosby Clipper," volume 12, No. 7, profusely illustrated, describes the use of Crosby clips in connection with wire rope equipment employed in building the Alcan Highway, shipbuilding and dam building. American Hoist & Derrick Co., St. Paul, Minn.

CEMENT-COATED STAPLES—

Bulletin—outlines how cement-coated staples, which must be used on nailed wood shipping containers and cleated plywood shipping containers going overseas according to Army-Navy specifications, are used with steel strapping and describes the help they offer in preventing straps from snagging on rough surfaces and other packages. Signode Steel Strapping Co., 2800 N. Western Ave., Chicago, Ill.

TEMPERATURE CONTROL CABINETS—

Catalog—#325, illustrated, pertains to "Precision"—Frigs constant temperature control cabinets. Standard cabinets include electrically heated ovens for laboratory drying operations, plastics, preheating, conditioning, rubber aging; sterilizers, incubators, paraffin embedding ovens; low temperature cabinets, humidity control cabinets; steam heated explosion-proof cabinets; vacuum ovens and combustion-tube furnaces. Also included is general information concerning mechanical and gravity convection heat transfers.

Precision Scientific Co., 1750 N. Springfield Ave., Chicago, Ill.

COMPRESSORS and PUMPS—

Bulletin—#B-6211 describes and illustrates Re-Flo compressors and pumps and is supplemented by installation diagrams, curves showing the relationship between pressure, temperature and volume. Also states that motors may be directly connected to Re-Flo units which operate at high speeds, 1200 or 1800 rpm.

Allis-Chalmers Manufacturing Co., Milwaukee, Wisc.

South's Construction Contracts Near \$116,000,000

(Continued from page 39)

tion system reaches southwest from Greensboro to Baton Rouge and connects with the Bayou system into Texas.

Southern construction awards, as tabulated from reports to the *Manufacturers Record*, were valued at \$564,016,000 so far this year, as compared with the \$1,427,710,000 for the first four months of 1942. Last year's four-month totals for public building and industrial construction were \$729,514,000 and \$431,921,000 respectively. Current figures show Southern public building work to be valued at \$283,369,000; industrial construction, at \$107,654,000.

Blue Book Reports Bank Resources

The banks of the United States continue to grow stronger in total resources—a trend which has held steady for the past 10 years, with the exception of a "momentary" drop in 1937. This is disclosed by a study of the figures in the First 1943 Edition of *Rand McNally Bankers Directory*, just published.

Deposits, surplus, total resources, cash, and Government bonds all have reached new all-time highs. Total deposits are now \$100,905,169,000; total resources \$110,080,044,000; and Government bonds \$45,986,649,000.

The BLUE BOOK figures also disclose that

an additional 56 banks increased their total resources to \$25 million or over, in the last half of 1943, to make a total of 390 in this "Big Bank" classification. These 56 banks are scattered through 27 states: 7 in Illinois; 5 in Texas; 4 each in Indiana, New Jersey, and New York; 3 in Florida and Ohio; 2 in California, Connecticut, Massachusetts, Michigan, and Utah; and 1 each in Arizona, Arkansas, Colorado, Kentucky, Louisiana, Mississippi, Missouri, Nebraska, North Carolina, Pennsylvania, Rhode Island, Tennessee, Washington, West Virginia, and Wisconsin.

This new edition of the BLUE BOOK contains 2,604 pages of banking and financial information, up-to-date as of March, 1943. Included among its features are: The latest available statements, arranged for easy comparison; new executive personnel and directors lists; the nearest banking points to all non-bank towns; a 5-year list of discontinued bank titles; all bank associations and government banking agencies; and the FDIC status of all banks.

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Contractors and Sub-contractors Wanted

(Continued from page 41)

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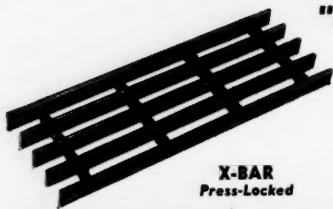
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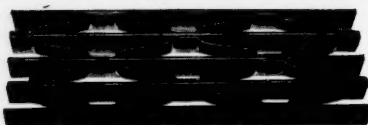
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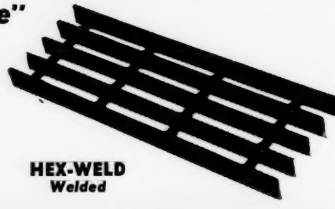
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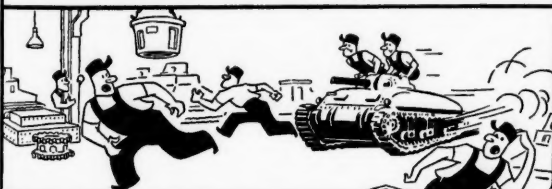


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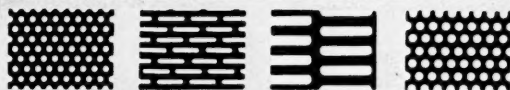


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Conservation and Use of Louisiana's Natural Gas

(Continued from page 37)

field of utilization for it than its service as mere fuel.

This included the conversion of natural gas hydrocarbons into superior aviation gasolines, lubricants, synthetic rubber, acetylene, plastics, and a whole host of other chemical derivatives, many of which are available in natural gas produced in Louisiana.

One of the most important of these new developments based on natural gas is the manufacture of synthetic rubber by use of the butadiene which is readily made from the butane in the gas. Already several plants in Louisiana are producing such rubber, and others are under construction.

Another use of natural gas, developed principally in response to needs of the present war, is for the manufacture of 100-octane aviation gasoline. This, too, is already being done in this state, on a steadily increasing scale.

There is also the great new field of chemical industry which now promises to make Louisiana a center of the nation's chemical manufacturing. More than \$200,000,000 have been invested in chemical industries in Louisiana during the past five years, and the number of chemical plants is growing.

It was not known until 1937 that all plastics which have their origin in the hydrocarbons of coal can be manufactured equally well and much more cheaply from hydrocarbons of natural gas. Industrialization in this field in Louisiana has been temporarily stopped, but full development of our potentialities in plastics is certain to come when peace is restored.

Some of the myriad of articles that can be manufactured from natural gas are safety glass, paints, dyes, glues, fabrics, textiles, seat covers, raincoats, computers, navigation instruments, lighting fixtures, electric insulation, instrument housing, cosmetics, upholstery, fountain pens, toothbrushes, pipes, spectacles, goggles, windshields, cockpit enclosures, leather finishes, impregnating agents for textiles, dentures and adhesives, lacquers, solvents, medicines, formaldehydes,

anti-freeze solutions, and fire extinguisher fluids. Many of these represent entire industries in themselves.

In all of these industries natural gas will figure prominently, not only as a raw material, but also as a source of fuel for power. An adequate supply of cheap electrical power will be a necessity with our industrial expansion, and natural gas alone can provide it, for we do not have coal or water power.

On the other hand, if we kill this source of power by the vitiation of our natural gas resources, all of our industries, actual and potential, are doomed. We are thankful that we have "learned about" our natural gas in time to protect it.

The new industries we have, and the others we will obtain, that have natural gas as their basis are not exclusively "wartime" installations, although as pointed out, many of them are now producing directly for the victory effort.

The majority of them will be permanent, serving through the years as steady contributors to our industrial and social welfare.

Plastic Plywood Airplanes

(Continued from page 29)

substitutes than as a new material with both great *structural* and *aerodynamic* advantages. However, the *aerodynamic advantages* now are better appreciated and have been taken advantage of in such outstanding airplanes as the DeHavilland Mosquito.

A part of the product development work in this field is a comprehensive program of structural research, certain results of which already have been applied. As a small but typical example, the old fashioned methods of joining ribs to spars by glued corner blocks has been eliminated in favor of a new type of structural joint. As another instance, all nailing of "shells" to frameworks has been eliminated by the use of automatically controlled strip, heat and pressure jigs. Further and much more extensive research which is in progress is necessary to develop the real structural possibilities of low density materials.

While wood has been available for years as a low density material

and has been used both in the solid and plywood form, it was not until the latter part of 1936 that methods were available for producing double-curved multi-layer "shells" of veneers with completely durable joints between layers and between the edges of adjacent strips. For the progress achieved, much credit for pioneer work in the field of wood for aircraft must go to men like Gillmor, who about 1923 developed in the Curtiss Oriole a two-layer shell made by pulling strips of veneers over a form with casein adhesive between them, or Loughheed, who in 1928 in the Lockheed Vega developed a method of molding a three-layer, double-curved fuselage half against a female concrete form with hydraulic pressure. Loughheed was certainly the pioneer in commercially obtaining uniform pressure at right angles to the molding die by hydraulic means. Even in those early days he used an inflatable bag.

In the work of early pioneers, a wet adhesive necessarily was used and this expanded the strips of veneers so that when the strips dried, gaps of varying width appeared between the adjacent strips making up the assembled shell. To cover over these gaps and to protect the adhesive from the effect of moisture a fabric cover was doped on. Today this practice is still used in certain planes assembled with casein adhesives, such as the DeHavilland Mosquito.

The Duramold process was developed to overcome the acknowledged early difficulties in producing a perfect shell. Also to provide thereby a structure in which the adjacent layers of shells are held tightly against each other *and* in which the edges of the strips making up the layers are bound together with a completely weather resistant adhesive. Naturally this had to be done with a dry adhesive and, while there was some data on the technique of using such dry adhesives for flat panels, none was available for making *double-curved* shells.

While this molding process is now a standard manufacturing operation it nevertheless requires accurate control, both as to the temperature and pressure, and to

(Continued on page 62)

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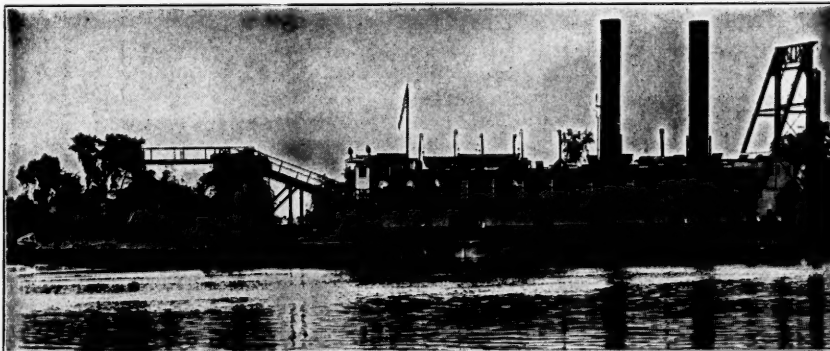
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Plastic Plywood Airplanes

(Continued from page 60)

the minute-by-minute relation between the two. The thermo-setting adhesives go through successive stages of becoming plastic, then increasing in plasticity to a point where the resin becomes a viscous liquid, then losing plasticity and finally setting. If pressure is applied while the resin is too liquid, the plastic goes into the wood, causing starved joints, while if the pressure is applied too late the resin may have become so thick that it does not get into the type of contact with the wood necessary for a perfect joint. The liquidity can be changed by the original formulation and in the temperature pressure relationship. This knowledge is required for the proper time, pressure and temperature relations and methods of controlling them in production, as well as the original formulation, in order to obtain a consistent product.

In considering how Duramold differs from plywood we must first consider how all materials made by any of the so-called bag molding processes differ from plywood, and then how the Duramold process differs from other bag molding processes. Any bag molding process does produce, especially in thick pieces, a more uniform product than plywood. This difference in resulting product will be evident when the difference in manufacturing methods is explained.

Plywood of the best modern grades is made from wood veneers and plastics, and these may be the same type of veneers and plastics as is used in the process. In plywood, the pressing is done between two rigid platens, and in the bag molding processes between one rigid and one flexible die, or platen. In molding pieces from a large number of veneers, the unequal thickness from point to point in the veneers must be taken into consideration. In the assembled pile there will be low spots and high spots.

In making plywood between two rigid dies, two approaches are possible. The first is to apply sufficient pressure to the rigid dies to bring the low spots into contact with pressure. This means crushing

some of the fibers at the high spots, so this crushing of fibers must be eliminated. The other approach is to use less pressure to eliminate crushing of the fibers. In this case the low spots do not have the pressure necessary for a perfect bond. By the use of one rigid platen and one flexible platen and fluid pressure, the entire piece is molded with sufficient and uniform pressure at the glue line irrespective of the inequalities in local thickness of individual veneers. When curved or double-curved parts are considered, the difficulties of getting a substantially uniform pressure without crushing the veneers is aggravated and it is here that bag molding processes show the greatest advantage, and produce a product differing substantially from plywood.

At this point, the natural question is: What invention is there in Duramold? And the answer is about the same as that which would be given if the same question was asked about many of our great industrial processes, and that is this. In most industrial processes, the art, broadly speaking, is old. In most of them, however specific and, at first sight, insurmountable problems arose when attempts were made to work the processes commercially. In most cases great amounts of time and money were needed in order to solve these problems, and in solving them inventions arose which, while they did not cover the process broadly, were nevertheless essential for its commercial operation.

The invention, therefore, was not the invention of a hand process but the invention of ways of making it commercially applicable to large, thick molded pieces.

When the problem of making parts such as half of a fuselage was presented, it was evident that the total pressure on the rigid platen would be of the order of 200 tons and this would involve heavy and expensive dies.

Our solution has been to use a thin heat conducting metal die in place of a solid form of wood or other material in combination with a blanket which could be sealed at the edge of the die. This metal heat conducting die member and the rubber blanket brought

heat to both sides of the part being molded, and so cut the molding time more than one-half. In addition, by the elimination of the bag and the substitution of a blanket sealed to the edge of the thin metal die, large dies became practical. For ease in handling, these large dies could be welded to a framework and the whole mounted on casters in order to be easily moved to the tank from the room where the material was laid against the die.

So far the plastic bonded plywood process has been applied only to training aircraft and to the manufacture of parts for combat aircraft such as tail cones and doors on bombers. But we can look forward to the possible application of the process to the construction of complete combat aircraft, in which case some interesting performance results may be achieved. The De Havilland twin-engine Mosquito previously referred to is an interesting index of what may develop along these lines.

Turpentine in the War

(Continued from page 31)

penes — commercially available. These include various classes of compounds such as hydrocarbons, alcohols, and ketones. In addition to the well-known camphor and other derivatives already mentioned, fenchone, terpineols, p-cymene, dimethyl styrene, and p-menthane are all now available commercially.

Synthetic Pine Oil Another Recent War Development

Synthetic pine oil is another turpentine product recently made available by commercial firms. Its development was stimulated by war needs to supplement the inadequate supply of the pine oil obtained normally in the wood naval stores industry. Pine oil finds important application as a flotation agent in the mining industry, where it is now used in large quantities to help meet increased war demands for zinc, lead, copper and molybdenum. Manufacture of woolen clothing for the Army and Navy has also increased the need for this product in preparations for treating wool to facilitate its

(Continued on page 64)



ELECTRIC ARC WELDED STRUCTURAL STEEL BOATHOUSE

Miami Yacht Storage Co., Miami, Fla.

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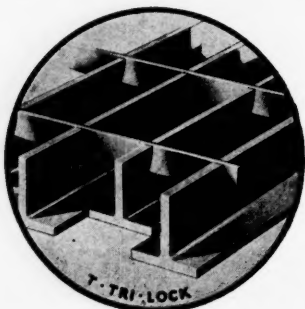
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Turpentine in the War

(Continued from page 62)

mechanical processing. It also finds extensive use in disinfectants and detergents.

Turpentine in the Protective Coating Field

Though there has been a gradual trend for some time toward the use of turpentine for the manufacture of chemicals, the principal market for turpentine still remains that of a solvent and thinner for use in varnishes, paints and other protective coating materials. The Department of Commerce estimates (Foreign Commerce Weekly, January 2, 1943) that at least 50 per cent of the output of the paint and varnish manufacturers is for the armed forces and the volume is growing steadily. Large volumes of turpentine are consumed by paints and varnishes for every conceivable kind of war product. Protective coatings are needed for tanks, hand grenades, munition boxes, helmets, shells, and many other war materials.

Varieties of Turpentine

It must be borne in mind that several distinct kinds of turpentine are produced commercially. These include *gum spirits* obtained from the oleoresin of the living tree, *steam distilled wood turpentine* obtained from the oleoresin in old stumps and lightwood, *sulphate wood turpentine* obtained as a by-product of paper pulp made from pine wood by the "sulphate" process, and *destructively distilled turpentine* which is a portion of the volatile oil obtained in the destructive distillation of resinous pine wood. Another turpentine is sometimes mentioned—the so-called "sulphite turpentine" obtained as a by-product of paper pulp made from spruce or other coniferous wood by the sulphite process. This latter can not be properly classed as a turpentine because it consists

largely of p-cymene, an aromatic hydrocarbon.

Compositions of the Several Turpentines Differ

Although the four recognized turpentines are all of pine tree origin and although they consist almost wholly of terpenes (except in the case of the destructively distilled product) they differ in the specific terpenes comprising them and in the proportions of the terpenes which they have in common. In the course of its investigations the Naval Stores Research Division has issued several publications on the detailed compositions of the various turpentines. Thus, it has been shown with regard to the dominant terpenes that gum and sulphate wood turpentines consist largely of mixtures of the dicyclic terpenes, α -pinene and β -pinene (about 95% in gum; about 90% in refined sulphate). They differ, however, in relative proportions of the two. Steam distilled wood turpentine consists largely of α -pinene and contains little or no β -pinene.

While all of these turpentines find use in the solvent-and-paint thinner field—some more, some less—the turpentine used for a specific chemical product and its relative suitability as a raw material for that product must necessarily depend on the particular components comprising it. Thus, steam distilled wood, gum, and refined sulphate wood turpentines might constitute suitable raw material sources for camphor, terpineol, synthetic pine oils, and, indirectly, for isoprene, cymene, dimethyl styrene, p-menthane and other chemicals. They would not, however, be equally suitable for production of β -pinene resin polymers, nor for myrcene rubbers, because gum and sulphate wood turpentines are the only ones containing β -pinene in quantity. In such instances, where one or another of

(Continued on page 66)

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LANCASTER IRON WORKS, INC.
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Turpentine in the War

(Continued from page 64)

the main constituents is used for production of a specific chemical, the remainder of the turpentine (as well as the by-products of the actual chemical conversion) becomes available for use as a solvent or for conversion to other chemicals.

The nonpinene portions of gum, steam distilled wood, and sulphate wood turpentines are relatively complex but consist mainly of monocyclic terpenes such as dipentene and its isomers. Although they constitute a small part of the whole turpentine, the cuts containing monocyclic terpenes obtained in extensive industrial fractionations could, in the aggregate, represent a very substantial source of terpene chemicals such as the terpene alcohols (terpineols), synthetic pine oil, and isoprene, and also of non-terpene chemicals such as p-cymene, dimethyl styrene, p-menthane, methyl chavicol and anethol.

The gum naval stores industry (which distills oleoresin from the living tree) is the oldest of the several naval stores industries; in fact, it is one of the oldest agricultural-chemical activities in the country, dating back to colonial times. However, it is the younger wood naval stores industry (particularly the stump resin industry) that has made the greatest

strides in the development of chemicals from naval stores. This industry, unlike the older one, has been centralized from the very beginning, and has maintained well-equipped research organizations. They have carried on investigations which resulted in the development of new and improved processes and made numerous terpene chemicals available commercially. Gum naval stores operations are spread over large areas of the southeastern and southern pine belt and include many thousands of relatively small farmer-producers (Georgia alone is stated to have 15 to 20 thousand producers). For these reasons, it has not had the advantages of centralized processing until very recently. In the number and diversity of products, the gum naval stores industry has been much more restricted than the wood naval stores industry, having virtually confined itself to the production of rosin and turpentine. The processing of gum naval stores in centralized plants has begun, and now a gradual elimination of hundreds of individual stills, that formerly characterized the industry, is taking place. This trend toward centralized processing in the gum naval stores industry, with a separation of *gum production* from *gum processing*, has been caused, in part, by a demand from consuming industries for higher quality and uni-

formity of naval stores products and, in part, by a growing demand from farmer-producers for an outlet for small lots of pine gum. Government research on naval stores has also facilitated this trend by developing improved naval stores processes and equipment and assisting both the farmer-producers and processors in all aspects of naval stores technology. This has been accomplished through the Naval Stores Station at Olustee, Florida, cooperative agents, publications, and the free use of Government-patented processes developed by scientific and technical staffs.

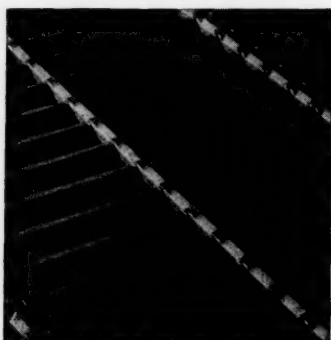
The Future of the Cotton Textile Industry

(Continued from page 27)

roads of foreign competition.

But in the South it is obvious that cotton culture, processing and distribution constitute the cornerstone of southern economy. In a broad sense, the significance of cotton is greater than that. It is not only the cornerstone of the southern economy, it is one of the major balancing factors in our total national economy. Upon the maintenance and prosperity of southern cotton depend the maintenance and prosperity of Wisconsin dairying, of Michigan automotive manufacture, of Minnesota wheat growing, of Iowa hog production and the California canning industry.

The South is versatile. It can grow most of the nation's agricultural products. It can likewise manufacture a much wider range of goods. But versatility cannot realize its full potentiality overnight. Its full expression must take the form of long-time growth. Consequently, if our cotton economy is not to be permanent, let us make sure that its shrinkage is extremely gradual, extending over as long a period as possible. Those who say lightly that we should abandon cotton as a major southern product do not realize how closely cotton is woven into every phase of our economy and fail to see that a sudden withdrawal of those vital threads would be disastrous to the whole population. In my own considered opinion there is no reason whatever to assume that our cotton economy



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should not be permanent.

As I have previously pointed out, research in the processing and physical properties and potential new uses of cotton is only in its infancy. Only within the last few years has pure science turned its attention to cotton in an organized and sustained way. The outstanding achievement is the construction of the great government regional laboratory in New Orleans which only now is being fully geared to its scientific purposes.

Other scientific researches are also under way. The State of Texas has made substantial appropriations to further research in cotton. The members of the cotton textile industry in North Carolina have recently raised considerable funds to promote research. Parallel efforts are being made by members of the industry in South Carolina. Also, a great southwide effort is now being made under the aggressive and far-sighted leadership of Mr. Fuller Callaway to procure industry support for the establishment of facilities and personnel to be engaged in pure research.

We also have the Textile Research Institute which is under the able direction of Mr. Fessenden Blanchard; the Research Division of the National Cotton Council under the direction of Dr. Simon Williams; the Research Division of the Cotton-Textile Institute under the direction of Mr. John T. Wigington. All of these are playing an important part in the promotion and practical application of research activities.

In addition to the New Orleans Laboratory, the Department of Agriculture has for a long period, through its other laboratories and its experiment stations, been engaged in constructive, scientific exploration of cotton.

In the years which lie ahead, a factor of equal importance to research effort will be the policy of the government with respect to crop regulation, adjustment compensation to farmers, foreign trade promotion and industry wage policies. Each of these phases of the cotton problem is extremely important and highly controversial. We should not await the end of the war to begin our thinking. The thinking must be within the frame-

work of two major considerations. The first is the potential accomplishment of scientific research. The second is the natural limitation of economic law. All reasoning and all conclusions must be within the boundaries of these two fundamental factors. Under their guidance the South should be a unit in the protection of cotton with all the fervor and devotion of the individual who protects his home.

Texas Airplane Plant Largest in U. S.

(Continued from page 32)

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(Continued on page 71)



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|-----|-----|----------|---------|---------|-------|
| 1 | 800 | Westg. | Syn. | 2200 | 450 |
| 2 | 250 | G.E. | I-K | 250 | 720 |
| 1 | 225 | G.E. | TRE-870 | 2200 | 200 |
| 2 | 200 | G.E. | I-K | 220/550 | 600 |
| 1 | 200 | G.E. | I-K | 220/550 | 514 |
| 2 | 200 | G.E. | I-K | 350 | 720 |
| 1 | 200 | Westg. | CS | 2200 | 870 |
| 1 | 250 | G.E. | KT | 220/440 | 1200 |
| 1 | 200 | G.E. | KT | 2200 | 1400 |
| 1 | 150 | G.E. | I-K | 220/550 | 450 |
| 2 | 150 | G.E. | I-K | 350 | 514 |
| 1 | 150 | G.E. | I-K | 350 | 575 |
| 2 | 150 | G.E. | I-K | 440 | 600 |
| 4 | 150 | Lou. Al. | FX | 220/440 | 1750 |
| 1 | 150 | Al. Ch. | AN | 2200 | 1800 |
| 1 | 125 | G.E. | I-K | 220/550 | 400 |
| 1 | 125 | G.F. | I-K | 440 | 514 |
| 1 | 125 | G.E. | I-K | 440 | 450 |
| 1 | 100 | G.E. | I-K | 220 | 575 |
| 1 | 100 | G.E. | I-K-14 | 220/440 | 720 |
| 1 | 100 | U.S. | SC | 220/440 | 1160 |
| 2 | 100 | G.E. | AN | 220/440 | 1770 |
| 1 | 75 | G.E. | I-K | 350 | 720 |
| 2 | 75 | G.E. | I-K | 220/440 | 900 |
| 3 | 75 | G.E. | I-K | 220/440 | 1200 |
| 1 | 75 | Westg. | CS | 220/440 | 1160 |
| 2 | 75 | Lou. Al. | OX 505 | 220/440 | 1770 |
| 1 | 60 | Triumph | AN | 220/440 | 430 |
| 1 | 60 | Cr. Wh. | AN | 220/440 | 670 |
| 2 | 60 | G.E. | I | 220/440 | 720 |
| 1 | 60 | Al. Ch. | AN | 220/440 | 1160 |

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| QU. | HP | MAKE | TYPE | RPM |
|-----|----|---------------|--------|-----|
| 1 | 75 | G.E. | I-4 | 900 |
| 1 | 75 | G.E. | KT-357 | 900 |
| 1 | 75 | Al. Ch. | AN | 900 |
| 3 | 50 | G.E. | KT-547 | 900 |
| 3 | 40 | G.E. | KT-347 | 900 |
| 6 | 40 | Al. Ch. | AN | 900 |
| 1 | 35 | Western Elec. | SL13B | 500 |
| 1 | 35 | Westg. | M | 900 |
| 1 | 30 | Westg. | C | 720 |
| 1 | 30 | G.E. | KT | 900 |
| 7 | 30 | Al. Ch. | AN | 900 |
| 2 | 25 | Westg. | MS | 715 |
| 9 | 10 | Al. Ch. | AN | 900 |

Write for Stocksheet.

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AC MOTORS

- 40 HP. 1800 RPM. 3/60/2300, Gen. Elec. KT
- 40 HP. 1200 RPM. 3/60/2300, Gen. Elec. MT
- 75 HP. 720 RPM. 3/60/210, Gen. Elec. IK

AC GENERATORS

- 80 KW. 900 RPM. 3/60/210, Fair-Morse
- 150 KW. 600 RPM. 3/60/220, Gen. Elec. ATB
- 150 KW. 225 RPM. 3/60/2300, Ft. Wayne
- 200 KW. 720 RPM. 3/60/210, Gen. Elec. ATB

DC GENERATORS

- 35 KW. 115 Volt, 720 RPM. Allis Chalmers
- 75 KW. 250 Volt, 500 RPM. Northern 2 brg.

PLATING GENERATOR

- 2500 Amp. 6 Volt, 900 RPM. Zucker Leavitt & Loeb

M-G SET

- 100 KVA. 3/60/210 V. AC Fair-Morse generator
- dir. con. 125 HP. 525 V. DC Fair-Morse motor

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- 190 Ton capacity, 6" dia., 10' long, horizontal

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Diesel: 105, 368, 425, 603, 900 & 1300 Ft.
Gasoline: 110, 220, 315, 415 & 500 Ft.
Steam: 150, 305, 540, 1500 & 1938 Ft.
CRUSHERS: Jaw 48x42, 18x9, 18x10,
24x13, 36x15, 30x10, 30x15, 36x24, 36x48
BOILERS: Economic—60, 100 & 125 H.P.
BUCKETS: Clamshell— $\frac{1}{4}$, 1 Yd. & 2 Yd. Cap.
LOCOMOTIVES: Gas and Diesel—4, 6, 8,
& 14 ton, 20 ton, 30 ton, & 55 ton.

CRANES: Caterpillar—6 ton, 12 ton, 15 ton
CRANES: Locomotive: 15, 20, 25 & 35 ton
HOISTS: Steam—6x8, 7x10, 8x10 & 9x12
Electric: 35, 60, 100, 125, & 400 H.P.
Gasoline: 15, 35, 60, 80 & 110 H.P.

MIXERS: Concrete: 10S, 14S, 21S & 28S
DERRICKS: GUY: 5 ton, 7 $\frac{1}{2}$ ton, 15 ton
Stiff Leg: 8, 10, 15, 25 and 75 ton Cap.

BELT: Conveyor: 14 In., 16 In., 18 In., 24
In., 30 In., 36 In., 40 In., 48 In., 60 In.
IDLERS:—36 In., 30 In., 24 In., 18 In.,
16 In. and 14 In.

DRYERS: 42"x24", 5"x35", 60"x30", 68"x60"
HAMMERMILLS: 36x24, 24x18, No. 3, 4 & 6
SCREENS: Vibrating: Hammer 4x5 & 5x5
CARS: Dump: 1 Yd., $\frac{1}{2}$ Yd., 3 Yd., 12 Yd.
ENGINE: Diesel: 60 H.P. & 100 H.P. F.M.
170 KVA 3 P., 60 C., 2300 V. WORTH-
ING DIESEL UNIT.

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Pumps.
1 $\frac{1}{2}$ Yd. 43-B Bucyrus Erie Diesel Caterpil-
lar Shovel, New 1937.

3—Monihan Diesel Walker Dragline, 90,
180 and 160' booms. 3, 6, 9 yds. capacity.

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tical.

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Osgood Shovel Front 1 yard
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Marion No. 90 Steam Shovel, 3 yds.
Marion Model 32 Steam Shovel, 1 $\frac{1}{2}$ yds.
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P. & H. Model 700 gas Dragline.
Lorain 75B, 1 $\frac{1}{2}$ yd. Shovel, gas
Bucyrus Erie Model 1035, 1 yd. Shovel, gas
Bucyrus Erie 50B Steam Shovel, 2 yds.
Bucyrus GA2 Crane 50' boom.
Northwest Model 105 Gas Crane
Industrial Loco. Crane, 20 tons, steam
Ohio Loco. Crane, 22 $\frac{1}{2}$ tons, electric

GOOD ITEMS

D8 Tractor with Le Tourneau Angledozer.
D7 Tractor with Le Tourneau Angledozer.
Koehring 27E Paver, new 1939.
Sutter Concrete Plant, 350 tons, new 1941
Blaw Knox 50 ton, 2 compt. Bin, weigh batcher
Hayward 2 yd. Clam. Rehandling Bucket
Williams 1 $\frac{1}{2}$ yd. Clam. Rehandling Bucket
Haise $\frac{3}{4}$ yd. Clam. Rehandling Bucket
Erie $\frac{3}{4}$ yd. Clam. Rehandling Bucket
2—Haise $\frac{1}{2}$ yd. Clam. Rehandling Buckets
Vulcan 16 ton gas Locomotive, 36" ga.
Milwaukee 8 ton, std. gauge, gas locomotive.
Vulcan 6 ton Gas Locomotive, 36" ga.
10—Western Side Dump Cars, 20 yards.
10—Western Side Dump Cars, 30 yards.
3—30 ton standard gauge Flat Cars, rebuilt.
B.S. 10 ton, 3 wheel gas Roller
B.S. 10 ton, 3 wheel steam Roller
Huber 5 ton, 3 wheel gas Roller
1—27 McKiernan & Terry Pile Hammers
2—25 McKiernan & Terry Pile Hammers
3—23 McKiernan & Terry Pile Hammers
Allis Chalmers 10' cent. elec. Pump, 3500 GPM.
4' Barnes gas Diesel Plunger Pump
2—C.M. & E. Model 28 Saw Tables, elec.
2—Butler 16 ft. Pug Mills
Rex Pumpcrete Outfits, Model 200, 180, 160, 160
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excellent condition ready to run
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All Weights—Especially
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6 American Type 0-6-0, 6 wheel switchers. Weight
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plete with foot wheels and head wheels.
Large quantity of belting and shafting.

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Boiler 72 inches by 18 feet, 150
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Water Heater; Boiler Feed Pumps; Coal
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Pioneer 300W portable gravel washing plant.
Monihan Walker dragline, elec., 3-yd., 70' bm.
Northwest 25-ton shovel trailer, girder type.
Toepfer 48" x 18" revolving screen & jacket.
Euclid 6-yd. bottom dump crawler wagons (8).
Hydroelectric plant, 750 KW, 60' head, A.C.
H. Y. Smith Co., 828 N. 5th, Milwaukee, Wis.

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FOR SALE:

2 Renaud Riveters—2 Rollers and Clean-
ers—2 Bench Shears—Shafts and Pulleys.

NEW BEDFORD BAND & TIE CO.

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PROPOSALS

Bids May 18

NOTICE TO CONTRACTORS

Sealed bids for furnishing all labor and materials, (except rail) and performing all work for the construction of track on the High Level Crossing of the New Orleans, Texas & Mexico Railway over Morganza Floodway between East Krotz Springs and Lott, Pointe Coupee Parish, Louisiana, will be received by C. S. Kirkpatrick, Chief Engineer, of the New Orleans, Texas & Mexico Railway, 204 Union Station, Houston, Texas, until 10 A.M. Central War Time, May 18, 1943, and then publicly opened. The contemplated construction requires approximately 6.4 miles of track to be laid; 14,350 cubic yards gravel ballast; 7,850 yards of crushed rock ballast and 20,000 creosoted track ties. Prospective bidders must have license to contract in the State of Louisiana and show evidence of the same before receiving information to bid. Further information upon application to C. S. Kirkpatrick, Chief Engineer.

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FOR SALE

165,000 acres timbered land on Southeast Atlantic Coast \$3.50 acre in fee. 30,000 acres of this is cut-over land.
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WANTED: Man with general office or field sales experience by large reputable manufacturer of seamless and electric welded tubing, alloy and carbon steels. Please apply, giving full information, experience, etc. to No. 9552 care Mfrs. Record.

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LANCASTER, ALLWIN & ROMMEL
445 Bowen Bldg., Washington, D. C.

Texas Airplane Plant Largest in U. S.

(Continued from page 67)

specialize, and modernize the ships individually."

Right there the Texas craftsmen come into their own, more every day. At first there wasn't room for them, since the Dallas center was one of these hurry-up jobs which will win the war. Authorization to establish it was received February 18th, 1942 and five days later it was operating—with men and material flown to Dallas from Burbank. Necessarily these men were veterans who knew the ships thoroughly.

Two hangars were leased at Love Field and U. S. Engineers began construction of the big "permanent" structure. Late in July the Modification Center moved into the first bay of this structure. Meanwhile as many as 40 classrooms in Dallas schools had been busy with the job of training Dallas and Texas labor for the intricate work of putting the punch into aircraft. Hiring in Dallas was accelerated, and included women. There is also a unit of the Army's mechanics' training program under instruction. Except that the Army Air Forces is practically the sole "customer," the center is essentially a link in Lockheed-Vega's worldwide Service Division organization, which maintains and services the companies' products in the four corners of the earth.

These services, under the general direction of Carl B. Squier, Vice-president of the Lockheed and

Vega companies, include extensive operations abroad and keep a large corps of expert air-craftsmen traveling continuously to "keep 'em flying" under all conditions in every clime.

"The end of the expansion of the Center is not yet in sight," according to Don Marshall, manager of the Base. Every employee knows that he or she is close to the firing line with the modification work that we do, and the quality and quantity of the work is a fine testimonial to skill and patriotism of air-minded Texans."

Sixty per cent of the hundreds of men and women who work the clock around at the Dallas base, equipping basic aircraft with the Army Air Forces latest gadgets for war, are Texans. Recruited from the farms, stores, homes of the Dallas area, they were rapidly trained as aircraft mechanics. Soon it is expected that 90 per cent of the employees will be Texans. Sixty per cent of the so-called "new hires" today are women.

Greensboro to Richmond Pipeline Completed

(Continued from page 43)

system of 1,260 miles of pipe serving the southeast. It was started nearly a year before Pearl Harbor in anticipation of possible enemy action against tankers off the east coast. It was completed in February of last year at a time when submarines were taking a heavy toll of tankers trying to supply the eastern seaboard.

Florida Pipeline Starts Operations

The eight-inch gasoline and light oil pipeline extending 200 miles between Carrabelle, on the West Coast of Florida, and Jacksonville, has started operation and the first run of gasoline reached Jacksonville late last month.

The petroleum products will be conveyed in barges through the intra-coastal canal system from the refineries to the western end of the pipeline and from Jacksonville north to destination.

The line, which is owned by Defense Plant Corporation and will have a daily capacity of approximately 25,000 barrels, cost approximately \$4,144,000.

The pipeline and appurtenances for this project were moved from Texas and relaid in Florida. They formerly were part of a pipeline facility operating between Longview and Houston, Texas, which could be removed without interfering with oil transportation in that section.

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